



STATE OF TENNESSEE

Department of Health

DIVISION OF EMS



Emergency Medical Technician Skills Manual

PREFACE

Prehospital care for the sick and injured has improved vastly in Tennessee since its introduction in 1972. This manual was developed and revised to reflect the changing nature of prehospital care and to both **assist** the Instructor's delivery of and the student's development of, the essential skills required to provide the proper care for an ill or traumatized patient. The procedures outlined in this manual may not always be applicable to every situation the Emergency Medical Technician may encounter. The Tennessee Department of Health, Division of Emergency Medical Services practical examination evaluates the student's abilities to perform these skills using the procedures described. This manual is in accordance to the 1994 USDOT EMT Basic Curriculum, the 2002 EMT-Extended Skills Modules, and the 2002 Airway Supplement to the 1994 US DOT EMT Basic Curriculum.

This skills manual provides a guideline for minimum behavioral psychomotor competencies. **Didactics and competencies beyond this manual are required.** Requirements for successful Psychomotor course completion include:

Students must demonstrate proficiency in all skills in each testing session of selected topic areas and mastery of skills in the final examination. Utilize special remedial sessions to assist in the completion of a lesson or module of instruction. Pass/fail scores should be in accordance with accepted practices. Usage of skill measurement instruments within the D.O.T. curriculum or developed by the way of a valid process is strongly recommended to achieve maximum results with the students. The skills measurement instruments contained within the D.O.T. curriculum **ARE NOT a teaching tool** but a **measurement** tool.

Both the 1994 D.O.T. EMT-Basic Curriculum and the 1999 D.O.T. EMT-Paramedic Curriculum recognize continuing education and skills refresher programs as key to ensure and maintain competency.

TABLE OF CONTENTS

PREFACE	2
AIRWAY	5
1. Airway Management and Respiratory Support	6
2. Oxygen Tank Operating Procedures	7
3. Oxygen Delivery	9
4. Oropharyngeal Airway	11
5. Nasopharyngeal Airway	13
6. Positive Pressure Ventilation Mouth to Mask (Pocket Mask)	15
7. Positive Pressure Ventilation Bag-Valve-Mask (BVM) Device	17
8. Double Lumen Airway - Combitube	19
9. Double Lumen Airway - PtL®	22
10. Suctioning	27
11. Nebulizers	29
12. Inhalers	31
PATIENT ASSESSMENT	33
13. Vital Signs	34
14. Patient Assessment	36
15. Information Reported to the Hospital by EMS Personnel	43
BANDAGING	46
16. Amputation	47
17. Amputated Part	48
18. Eye Avulsion with Eyeball Extruding	49
19. Flail Chest	50
20. Head Bandage	51
21. Impaled Objects	52
22. Bleeding Control and Shock Management	53
SPLINTING	56
23. General Rules for Splinting	57
24. Sling and Swathe for Upper Extremity	58
25. Foot or Ankle Splint	60
26. Pneumatic Anti-Shock Garment for Splinting	61
BOARD IMMOBILIZATION	64
27. Radius/Ulna	65
28. Tibia/Fibula	67
29. Hip	69
30. Sager Traction Splint	71
31. Traction Splint	73
32. Joint Injury Splint	76
SHOCK	77
33. Pneumatic Anti-Shock Garment – Hypovolemia Management	78
34. Definitions of Terms	81
35. Math Calculation for Epinephrine 1:1,000	82
36. Subcutaneous Injection	83
37. Intramuscular Injection	86
38. Epinephrine 1:1000 Auto-Injector	90
PACKAGING	92
39. Clam Shell Spinal Immobilization Device	93
40. Helmet Removal	95
41. Long Spine Board	97
42. Scoop Stretcher	100

EMT PHARMACOLOGY	102
43. Activated Charcoal	103
44. Aspirin	104
45. Bronchiodilator – Albuterol	105
46. 50% Dextrose in Water	106
47. 25% Dextrose in Water	107
48. Epinephrine 1:1000	108
49. Nitroglycerine Tablet	109
50. Nitroglycerine Spray	110
51. Oxygen	111
INTRAVENOUS THERAPY	112
52. Math Calculation/Intravenous Therapy Drip Rates	113
53. IV Bag Assembly and Set up	114
54. Obtaining IV Access	116
55. D ₅₀ W and D ₂₅ W Bolus	120
56. Discontinuing an Intravenous Line	122
AUTOMATED EXTERNAL DEFIBRILLATION	123
APPENDIX A - Application Process	128
57. Requirements to Become Licensed in TN	129
58. Understanding the Application Process	130
59. Checklist for EMT Licensure in TN	131
APPENDIX B – Renewal Process	132
60. When to Renew	133
61. How to Renew	134
62. Online Renewal Process	138
63. EMT-Basic National Registry Renewal	140
APPENDIX C – EMS Statutes and EMS Rules & Regulations	142
64. Emergency Medical Services Statutes	
65. EMS Rules and Regulations	
66. Destination Determinates	
67. The Field Triage Decision Scheme	
68. Health Insurance Portability and Accountability Act (HIPPA)	
69. Domestic Violence	
APPENDIX D – Miscellaneous	143
Mark I Auto-Injector	
Change of Address Form	
IM Injection Skill Sheet	

AIRWAY

AIRWAY MANAGEMENT AND RESPIRATORY SUPPORT

A patient without an airway is a dead patient.

Every patient must have a patent airway to survive. When the airway is obstructed, the EMT must clear it as soon as possible using the methods described in this section or other means within the EMT's Scope of Practice and in accordance with the Standard of Care. The only exception is situations where it is unsafe or the airway problem is such that it cannot be treated in the field and the patient must be transported immediately to a hospital.

Once the airway is opened, the EMT must determine if breathing is adequate. Patients with inadequate breathing must be artificially ventilated using mouth-to-mouth, mouth-to-mask, bag-valve-mask or a flow-restricted, oxygen powered ventilation device. If the patient has adequate breathing, the EMT must decide if oxygen is indicated. If oxygen is necessary, the EMT must select the appropriate device and follow the procedure for delivery.

The EMT's responsibility for providing adequacy of airway, oxygenation, and ventilation is paramount to the sick or injured patient's well being and organ system integrity. In short, nothing other than immediate personnel safety takes priority over airway management and respiratory support of the sick or injured patient.

The EMT must be well adept at early recognition of respiratory emergencies and highly proficient in the intervention and management of such emergencies. Attaining proficiency in the following skills and techniques will help assure the Emergency Medical Technician is prepared to meet the critical challenges of respiratory emergencies.

OXYGEN TANK OPERATING PROCEDURES

Set-Up and General Administration

GOAL

To identify and properly assemble an oxygen delivery system to deliver oxygen to a patient

OBJECTIVE

Given an oxygen tank the EMT student will be able to properly identify and assemble an oxygen delivery system ready for oxygen administration within 5 minutes.

EQUIPMENT

Oxygen tank
Oxygen regulator with regulator washer and gauges
Oxygen tank wrench

PROCEDURE:

1. Remove protective seal. Observe for a static pressure date.
2. Quickly open, then shut, the valve.
This procedure is to blow out any foreign matter that could adversely affect the gauges and gauge readings. This is also known as "cracking the tank".
3. Attach regulator-flowmeter to tank.
Ensure washer is between the tank port and the regulator. Align regulator-flowmeter to tank port utilizing the Pin Index System. Only hand-tighten the regulator-flowmeter to the tank.
4. Open valve to ensure there are no leaks and to ensure tank pressure is at least 500 psi. If a leak exists, remove regulator and repeat the process.
5. Attach oxygen delivery device to regulator-flowmeter.
6. Open regulator- flowmeter to desired setting (LPM).
7. Apply oxygen device to patient.
8. When complete, remove device from patient, turn off valve and remove all pressure from the regulator.

GENERAL CONSIDERATIONS

Change oxygen tanks when tank contains a minimum of 500 psi.

Do not use tank beyond the Safe Residual Pressure of 200 psi.

Dry oxygen is not harmful in short term. A humidifier is needed only for patient on oxygen for a long time and is not generally needed for Prehospital care.

Possible fire hazard due to continual leakage of oxygen.

Possible fire hazard if tank/regulator parts are lubricated with oil products.

Oxygen tanks are a possible projectile if tank tips over due to contents under high pressure. Tanks should be positioned/secured to prevent falling and to prevent blows to the valve-gauge assembly and secured during transport.

Oxygen Cylinder Sizes

A full tank is approximately 2000 psi. and varies with ambient temperature.

Cylinder	Liters	PSI
D	350	2,000 – 2,500
E	625	2,000 – 2,500
M	3,000	2,000 – 2,500
G	5,300	2,000 – 2,500
H	6,900	2,000 – 2,500

OXYGEN DELIVERY

Equipment for Oxygen Delivery to Patients who are breathing Adequately

GOAL

Provide adequate oxygen to patient

OBJECTIVE:

Given a simulated patient, the EMT student will be able to identify the proper oxygen delivery device and percent of oxygen delivery within 5 minutes.

EQUIPMENT

Body substance isolation
Oxygen source
Appropriate oxygen delivery device
 non-rebreather mask (NRB)
 nasal cannula (NC)

PROCEDURE:

1. Gather and check equipment.
2. Take body substance isolation precautions.
3. Assess respiratory effort and record.
4. Open oxygen tank valve all the way then back $\frac{1}{4}$ turn.
5. Select the appropriate oxygen delivery device.
 - a. Non-Rebreathing Face Mask
 1. ensure proper fit of mask
 2. connect NRB with tubing to the supplemental oxygen source
 3. select proper flow rate, 12 - 15 liters per minute
 4. inflate reservoir before placing mask on patient (a gloved finger inserted over inlet valve in mask will facilitate bag filling)
 5. place strap behind head
 6. "seat" mask on face & bend conforming metal piece to bridge of nose and snug strap
 7. if the patient cannot tolerate a non-rebreather mask a nasal cannula should be applied
 8. if bag deflates more than $\frac{1}{3}$, increase oxygen rate - if already at 15 Lpm, patient may need PPV w/ BVM.
 - b. Nasal Cannula
 1. attach nasal cannula with tubing to supplemental oxygen source
 2. set proper flow rate, 2-6 liters per minute
 3. place prongs upward into nostrils
 4. place narrow tubing to which the prongs are attached in nostrils
 5. secure strap around patient ears.
 6. snug under chin, using slip ring
6. When complete, remove device from patient, turn off valve and remove all

pressure from the regulator. (terminating oxygen therapy)

TABLE OF DELIVERY DEVICES

DEVICE	APPROXIMATE %	LITER FLOW/MIN
Non-rebreather	90	12-15
Nasal Cannula	24 - 40	2 - 6

GENERAL CONSIDERATIONS

Assure **NO SMOKING** in the ambulance. Smoking or any other use of tobacco products is prohibited inside or within ten (10) feet of an ambulance.

Patients who are cyanotic, cool, clammy or short of breath need oxygen and should receive high concentration oxygen. Concerns about the dangers of giving too much oxygen to patients with history of chronic obstructive pulmonary disease (COPD) and infants and children have not been shown to be valid in the Prehospital setting.

Capillary (airway) Dead Space is the area of dead space between the point of oxygen delivery and the alveoli. Fill this space in order for the patient to receive beneficial oxygen. Space includes oro/nasopharynx, pharynx, trachea, and bronchi.

If breathing is inadequate and the patient is responsive, administer oxygen.

All responsive patients breathing < 8 or >24 breaths per minute should receive high flow oxygen (defined as 15 LPM via NRB).

- If the patient is unresponsive and the breathing is adequate, open and maintain the airway and provide high concentration oxygen.
- If the breathing is inadequate, open and maintain the airway, assist the patient's breathing and utilize ventilatory adjuncts. Use oxygen in all cases.
- If the patient is not breathing, open and maintain the airway and ventilate using ventilatory adjuncts. Use oxygen in all cases.

Any patient with a reduced minute volume must receive assisted ventilation with BVM and appropriate adjuncts.

OROPHARYNGEAL AIRWAY

Oral Airway

GOAL

To prevent upper airway obstruction by the tongue

OBJECTIVES

Given a simulated patient, the EMT student will be able to state the indications and contraindications for using an oropharyngeal airway and demonstrate the proper selection and insertion of an oropharyngeal airway within 1 minute.

INDICATIONS

To assist in maintaining an open airway on unresponsive patients with or without trauma who are without a gag reflex, has an inadequate airway, or not breathing
Patients with need for prolonged artificial ventilation
Any patient ventilated with a BVM

CONTRAINDICATIONS

If oral airway is introduced into a conscious or semiconscious patient with an intact gag reflex, this device could cause vomiting or spasm of the vocal cords.
Unable to introduce airway into oropharynx, secondary to massive trauma

EQUIPMENT

Body substance isolation
Assorted oropharyngeal airway sizes
Suctioning Equipment

PROCEDURE:

(EMT positioned superior to the head of the patient)

1. Take body substance isolation precautions.
2. Select appropriate size airway: Measure from corner of the patient's lips (mouth) to the bottom of the patient's ear lobe or angle of jaw.
3. Open the patient's mouth.
 - a. No suspected C-spine injury: Head tilt, chin lift.
 - b. Suspected C-spine injury: Jaw thrust with head kept in neutral position.
 - c. Infant: Sniffing position with chin lift maintaining head in neutral position.
4. In the adult patient, to avoid obstructing the airway with the tongue, insert the airway with the tip facing toward the roof of the patient's mouth.

5. Advance the airway gently until the hard palate is met (resistance) then rotate airway 180 degrees so that it comes to rest with the flange on the patient's teeth.

ALTERNATE INSERTION PROCEDURE

1. Open mouth and retract tongue with tongue depressor
2. Insert right side up. Use a tongue depressor to press the tongue down and forward to avoid obstructing the airway. Following natural curvature, advance airway until flange rests against teeth.
3. This is the preferred method for airway insertion in an infant or child.

RISK AND COMPLICATIONS

Stimulation of gag reflex may increase risk of vomiting, aspiration, or laryngospasm. Be prepared to suction.

If chosen airway is TOO SHORT: Tip may displace tongue into oropharynx obstructing airway or airway will not advance far enough to lift tongue.

If chosen airway is TOO LONG: Tip may push epiglottis over glottic opening or induce laryngospasm.

If the only choice is between the airway that is too long or the airway that is too short, choose the airway that is TOO LONG. Measure from the corner of the patient's lips to the bottom of the patient's ear lobe or angle of jaw and mark the airway. Follow proper insertion techniques to the mark and secure airway to prevent airway from advancing further

GENERAL CONSIDERATIONS

Provide supplemental oxygen by either NRB or BVM, based on patient's condition

Assist ventilations as needed and enough volume to ensure adequate chest rise

Adult - 1 every 5 seconds

Infant/Child - 1 every 3 seconds

Be prepared to suction!

A patient tolerating an oropharyngeal airway suggests the need for upgrading to an advanced airway such as a Double Lumen Airway Device.

NASOPHARYNGEAL AIRWAY

GOAL

To prevent upper airway obstruction by the tongue

OBJECTIVES

Given a simulated patient, the EMT student will be able to state the indications and contraindications for using a nasopharyngeal airway and demonstrate the proper selection and insertion of a nasopharyngeal airway in 3 minutes.

INDICATIONS

Conscious patient with an intact gag reflex
An inadequate airway due to relaxed tongue
Patient with decreased level of consciousness who cannot tolerate the oropharyngeal airway
Trismus, preventing oropharyngeal insertion
Massive trauma to lower jaw, preventing insertion of oral airway

CONTRAINDICATIONS

Should not be used in suspected basilar skull fractures or obviously severe (frank) nasal injuries

EQUIPMENT

Body substance isolation
Assorted nasopharyngeal airways
Water soluble lubricant
4 x 4 Gauze Pad

PROCEDURE:

(Position EMT superior to the head of the patient)

1. Gather and check all equipment
2. Take body substance isolation precautions.
3. Select appropriate size airway.
 - a. For correct length – measure the distance from the tip of the nose to the tip of the patient's earlobe
 - b. For correct diameter - largest size that will easily insert into nostril, approximately size of patient's little finger.
4. Lubricate with water-soluble lubricant.
 - a. place 4x4 in gloved hand
 - b. apply generous amount of water soluble lubricant onto 4x4
 - c. leaving the hand and 4x4 flat, roll airway through lubricant ensuring a generous amount is applied

5. Position patient's head
 - a. No suspected C-spine injury: Head tilt, chin lift
 - b. Suspected C-spine injury: Jaw thrust keeping head in neutral a position.
 - c. Child (1-8 yr.) - Sniffing position with chin lift maintaining head in neutral position.
6. Insert it posteriorly. Bevel should be toward the base of the nostril or toward the septum.

NOTE: Soft pre-shaped airways are designed to insert into the right nostril. The pre-shaped design matches the natural curvature of the right nasal airway.
7. Advance airway following natural curvature up to measured distance
 - a. DO NOT force.
 - b. If resistance is met, withdraw and attempt insertion through left nostril
 1. Re-lubricate airway if necessary.
 2. Insert airway with curvature toward the roof of the nostril gently into left nostril so that bevel faces the base of nostril or toward the nasal septum
 3. Advance airway gently until resistance is met then rotate 180 degrees
 4. Continue to advance airway up to measured distance

RISK AND COMPLICATIONS

Insertion too far or with an airway that is too long may stimulate gag reflex that may cause vomiting and aspiration or laryngospasm

Always have suction prepared prior to insertion

If chosen airway is TOO SHORT may not advance far enough for adequate airway.

If chosen airway is TOO LONG tip may push epiglottis over glottic opening or induce laryngospasm.

If the only choice is between the airway that is too long or the airway that is too short, choose the airway that is TOO LONG. Measure from the tip of the earlobe to the tip of the nostril and mark the airway. Follow proper insertion techniques to the mark and secure airway to prevent airway from advancing further

Even though the airway is generously lubricated, it is still a painful stimulus and the nasal passages may still suffer trauma secondary to insertion. Be prepared for nosebleed.

POSITIVE PRESSURE VENTILATION (PPV)

Mouth to Mask (Pocket Mask) Ventilation

GOAL

To provide adequate oxygenation and ventilation for the patient

OBJECTIVE

Given a patient, the EMT student will be able to demonstrate the use of a pocket mask within 2 minutes.

EQUIPMENT

Body substance isolation
"Pocket Mask" with
 Transparent material
 Oxygen connector port for adding supplemental oxygen
 One-way valve that diverts patient's exhaled air
 Filter
Oxygen source
Oropharyngeal or nasopharyngeal airway

PROCEDURE:

(EMT is positioned superior to the head of the patient)

1. Gather and check equipment
2. Take body substance isolation precautions.
3. Insert oropharyngeal or nasopharyngeal airway if indicated. (see pages 11-14)
4. Connect oxygen inlet to oxygen source as soon as possible @ 15 Lpm.
 Ensure appropriate size mask for patient's face and ensure good seal
5. Position patient's head
 - a. No suspected C-spine injury: Head tilt, chin lift
 - b. Suspected C-spine: Jaw thrust with head in neutral position
 - c. Infant: Sniffing position with chin lift maintaining head in neutral position.
6. Place mask over mouth and nose forming a seal
 Ensure apex of mask is over the nose
 Make sure lower portion should fit between the lower lip and chin protuberance
7. Using both hands, lift along the point or angle of the mandible with middle, ring and little fingers while pressing mask to face with index fingers and thumbs.
 - a. If suspected spine injury, do not tilt head. Only lift along the angle of the jaw.

- b. If no suspected spine injury, lift the jaw into the mask as you tilt the victim's head backward and place your remaining fingers under the angle of the jaw. While lifting the jaw, squeeze the mask with your thumbs to achieve an airtight seal between the mask and the victim's face.
- 8. Seal mouth around the one-way valve attached to the mask and give slow breaths by blowing your exhaled air into the valve. Ventilations should be delivered:
 - 1. 1.5 - 2 seconds for adults
 - 2. 1 - 1.5 seconds for pediatrics
- 9. **LOOK, LISTEN, and FEEL** for adequate air exchange with each breath and record.
 - a. **LOOK** for chest rise and fall
 - b. **LISTEN** for exhaled air
 - c. **FEEL** for exhaled air
- 10. Continue to ventilate at appropriate rate and enough volume to ensure adequate chest rise.
 - a. Once every 5 seconds for adult
 - b. Once every 3 seconds for child/infant

GENERAL CONSIDERATIONS

Ventilate the adult patient at a rate of 10 – 20 breaths per minute.

Change to BVM as soon as possible.

Observe for vomitus and be prepared for suction.

16 % oxygen is provided when ventilations are provided without supplemental oxygen.

50 - 60 % oxygen is provided when connected to supplemental oxygen.

Mouth-to-mask ventilation provides more volume than bag-valve-mask ventilation.

POSITIVE PRESSURE VENTILATION (PPV) Bag-Valve-Mask (BVM) Device

GOAL

To provide adequate oxygenation and ventilation for the patient in respiratory distress, arrest, or any other need of forced or assisted ventilations

OBJECTIVE

Given a simulated patient, the EMT student will be able to describe all parts and functions of the BVM device and demonstrate the use of a BVM device within 2 minutes.

EQUIPMENT

Body substance isolation

Self-inflating BVM device with oxygen reservoir and true non rebreathing valve

Adult BVM Volume: Approximately 1600 ml

Child/Term Infant BVM Volume: minimum of 800 ml

Delivery volume potential should be at least $\frac{1}{2}$ of device volume.

A non-jam valve allowing maximum oxygen inlet flow of 15 liters per minute

No pop-off valve or pop-off valve disabled

Standard 15/22 mm fitting

Proper fitting, transparent face mask

Oxygen and oxygen connecting tubing

Oropharyngeal or nasopharyngeal airway

Stethoscope

PROCEDURE:

(Position the EMT superior to the head of the patient)

1. Gather equipment and take body substance isolation precautions
2. Insert oropharyngeal or nasopharyngeal airway based upon absence or presence of gag reflex.
3. Assemble mask to bag-valve mask, and as soon as possible, connect oxygen reservoir to supplemental oxygen at 15 liters per minute.
4. Position patient's head
 - a. If no suspected C-spine injury: Head tilt, chin lift
 - b. If suspected C-spine injury: Jaw thrust with head in neutral position
 - c. Infant: Sniffing position with chin lift maintaining head in neutral position.
5. Position thumbs over top half of mask, index and middle fingers over bottom half.
6. Place apex of mask over bridge of nose, then lower mask over mouth and upper chin. If mask has large round cuff surrounding a ventilation port, center port over mouth.
7. Lift the mandible at angle of the jaw utilizing the little, ring, and middle fingers. Simultaneously press the mask to face with index finger and thumb. ("E" "C")

8. Squeeze bag slowly until chest rises.
Tidal volume should be titrated to provide sufficient ventilation to produce visible chest expansion.
 1. 1.5 - 2 seconds, Adult
 2. 1.0 - 1.5 seconds, Pediatric
9. **LOOK, LISTEN, and FEEL** for adequate air exchange.
 - a. **LOOK** for chest rise and fall
 - b. **LISTEN** - Auscultate for air sounds over the stomach and at both sides of the chest
 - c. **FEEL** for good bag-valve device compliance
10. Continue to ventilate at appropriate rate.
 - a. **ADULTS:**
At least once every 5 seconds
 - b. **CHILD/INFANT:**
At least once every 3 seconds
11. If chest does not adequately rise and fall with each ventilation, re-evaluate.
 - a. If chest does not rise, reposition head.
 - b. If air is escaping from under the mask, reposition fingers and mask.
 - c. Check for obstruction.
 - d. If chest still does not rise and fall, use alternative method of artificial ventilation, e.g. pocket mask, manually triggered device.

GENERAL CONSIDERATIONS

Provides less volume than mouth-to-mask.

Gastric distention

Increase inspiratory times to deliver the necessary tidal volume at low peak inspiratory pressures

If possible, apply cricoid pressure or Sellick Maneuver (requires additional rescuer)

Low ventilatory volume

Squeeze bag with free hand against your leg or side to expel additional volume

With two rescuers (preferred), use two hands to seal mask and a second rescuer to squeeze bag with both hands.

Incorporate the use of an Automatic Transport Ventilator, if available, to provide adequate tidal volume while sealing mask with both hands.

If difficulty exists in providing a leak proof seal to the face, resort to mouth-to-mask method.

Observe for vomitus and be prepared for suction.

ALWAYS reassess the patient's ABC's, skin color, LOC and record.

The flow restricted, oxygen-powered ventilation device procedure is for adult patient use only. The operational and procedural guidelines are similar to the BVM.

DOUBLE LUMEN AIRWAY DEVICE

Combitube

GOAL

To provide adequate oxygenation and ventilation for the patient in respiratory distress or arrest

OBJECTIVE

Given a simulated patient, the EMT student will be able to state the indications, contraindications, and demonstrate the insertion and removal of the airway device.

INDICATIONS

Patients 16 years or older experiencing apnea or inadequate spontaneous respiratory effort
 Absence of protective gag reflex
 When there is only one EMT available for transport.

CONTRAINDICATIONS

Under age 16 yrs.	Cirrhosis of the liver
Under 5 feet tall	Known esophageal disease
Over 7 feet tall	Ingestion of caustic substance
Gag reflex	

EQUIPMENT

BSI	Suction Device
Combitube Kit	Rigid (Yankeur) suction tip
Bag Valve Mask Device (BVM)	# 18 French Levine Catheter
Appropriate size Oral airway	Lubricate (water soluble jelly)
Stethoscope	4x4's
Oxygen	

PROCEDURE: (INSERTION)

(EMT is positioned superior to the head of the patient)

1. Gather and check equipment.
2. Take body substance isolation precautions.
3. Hyperventilate/Oxygenate with BVM for at least 1 minute (24 breaths per minute) before attempting insertion (max. insert time 30 seconds)
4. Obtain orders from Medical Control to insert device, unless Standing Orders exist.
5. Prepare Combitube for insertion
 - a. Remove from package and perform "cuff test" immediately prior to insertion
 - (1) cuff test - inflate both cuffs to manufacturer's recommended specifications to determine if leak exists. If no leaks are

- detected, deflate cuffs and proceed.
 - b. Lubricate with water soluble lubricant
 - (1) place 4x4 in gloved hand
 - (2) apply generous amount of lubricant on 4x4
 - (3) holding hand with 4x4 and lubricant flat, roll device through lubricant to ensure a generous amount of lubricant is applied to the cuffs and tip
- 6. Instruct temporary discontinuation of ventilations, removal of BVM, and oropharyngeal airway.
- 7. Perform the Tongue / Jaw lift maneuver.
- 8. Insert tube into mouth & advance gently, until the printed ring on the tube is aligned with the teeth or alveolar ridges.
- 9. Inflate line 1, proximal cuff (blue pilot), with 100 ml. of air using 140 ml. syringe, removing the syringe from port post inflation. Do not discard syringe.
- 10. Inflate line 2, distal cuff (white pilot), with approx. 15 ml. of air with the 20 ml. syringe removing the syringe from port post inflation. Do not discard syringe.
- 11. Ventilate through tube #1 (blue tube) confirm breath sounds and chest rise (auscultate over gastric, upper and lower lung lobes bilaterally, and mid-axillary bilaterally).
 - a. If breath sounds positive and gastric negative, continue appropriate ventilatory support
 - b. If breath sounds negative & gastric positive, ventilate through tube #2 (clear tube), confirm breath sounds and chest rise and continue with appropriate ventilatory support

NOTE: Pneumonic for Order of Insertion - VOLS
Ventilate
Orders
Lubricate
Stick it in

OPTION:

- 1. Passive Gastric Decompression, as needed for acute gastric distention
 - a. DO NOT interrupt ventilations while performing.
 - b. Measure and lubricate an 18 French Levine suction catheter.
 - 1. For approximate distance, measure distance from tip of tube not being used to ventilate the patient to tip of the ear lobe, earlobe to chin, and chin to xyphoid process.
 - 2. Mark this distance on catheter.
 - 3. Lubricate catheter with a water soluble lubricant.
 - c. Insert catheter through the non-airway tube and advance catheter into the stomach up to the measured distance.
- 2. Allow stomach to decompress and remove catheter, repeat prn.
- 3. Slow and gentle pressure on abdomen may be necessary to assist with the decompression of the stomach.

REMOVAL

1. State and observe indications for removal
 - a. Patient regains consciousness
 - b. Protective airway gag reflex returns
2. Prepare suction
3. Turn patient preferably on left side, unless contraindicated
4. Deflate cuffs (proximal first)
5. Perform Passive Gastric Decompression
6. Remove Combitube® with single motion on expiration, following natural curvature of pharyngeal area as patient exhales.
7. Suction as needed.
8. Place patient on high flow / concentration oxygen, provide airway and ventilatory support as appropriate to patient's condition.
9. Continue close reassessment of airway status and respiratory system - ABC's.

PHARYNGEAL TRACHEAL LUMEN AIRWAY [PtL®]

GOAL

To provide adequate oxygenation and ventilation for the patient in respiratory arrest or distress

OBJECTIVE

Given a simulated patient, the EMT student will be able to state the indications, contraindications, and demonstrate proper technique for inserting and removing the PtL® airway.

INDICATIONS

Patients 16 years or older experiencing apnea or inadequate spontaneous respiratory effort

Absence of protective gag reflex

Copious oropharyngeal bleeding

When there is only one EMT available for transport.

CONTRAINDICATIONS

Patients under 16 years old

Under 5 feet tall

Over 7 feet tall

Gag reflex

Cirrhosis of the liver

Known esophageal disease

Known caustic poison ingestion

EQUIPMENT

Body substance isolation

Bag-Valve-Mask (BVM) device

Oxygen and tubing

Suction device

Rigid (Yankeur) suction tip

Stethoscope

PtL® Airway

Appropriate size oropharyngeal airway

4x4's

18 French Levine catheter

Water Soluble Lubricant

DESCRIPTION

PtL® is a single patient use device that is clean but not sterile

The PtL® is inserted blindly into the airway without direct laryngoscopy

The PtL® has a cuffed tube that can serve as either an esophageal obturator or an endotracheal tube

Another cuff, which inflates in the oropharynx results in isolation of the lower airway. Three tubes are visible to the rescuer after insertion. The tubes are numbered (1, 2 and 3).

Tube 1 – allows the rescuer to orally inflate the two cuffs simultaneously

Tube 2 – (green) extends to the isolated airway distal to the inflated cuff. When ventilated, this tube will ventilate the lungs if an esophageal intubation has occurred. Tube 2, which will always be in the oropharynx, is the short tube.

Tube 3 – is the cuffed, long tube, which serves as the esophageal obturator, or endotracheal tube, depending on anatomical position. A plastic stylet aids in placement of the device and occludes the esophageal obturator tube. If tube 3 is placed in the trachea, the stylet is removed to allow tracheal ventilation.

PROCEDURE (INSERTION)

(Position the EMT superior to the head of the patient)

1. Gather and check all equipment.
2. Take body substance isolation precautions.
3. Oxygenate/ventilate the apneic patient with a BVM and oral airway (before each attempted insertion (limit insertion attempts to a maximum of 30 seconds).
4. Assess breath sounds and record.
5. Obtain orders for insertion from Medical Control unless Standing Orders exist.
6. Prepare PtL® for insertion
 - a. Remove protective wrapping from the cuffs.
 - (1) DO NOT perform a test inflation of the cuffs. Cuff integrity is determined at the factory. Routine inflation will increase the chance of the cuff tearing during insertion, and will weaken the cuffs.
 - b. Assure the White Port Cap is in the closed position.
 - c. Lubricate with water-soluble lubricant
 - (1) place 4x4 in gloved hand
 - (2) apply generous amount of lubricant on 4x4
 - (3) holding hand with 4x4 and lubricant flat, roll device through lubricant to ensure a generous amount of lubricant is applied to the cuffs and tip
7. Instruct temporary discontinuation of ventilations, removal of BVM, and oropharyngeal airway
8. Position head, in extension (except for trauma patient where neutral in-line position must be maintained).
9. Hyperoxygenate / Hyperventilate with BVM for at least 1 minute (24 breaths per minute) before attempting insertion (max. insert time 30 seconds).

10. Insert your thumb deep into the supine patient's mouth. Grasp the tongue and lower jaw between your thumb and index finger and lift straight upward. In your other hand, hold the PtL® Airway so that the curvature matches the direction of the natural curvature of the pharynx.
11. Carefully insert the tip into the mouth to the right of the tongue following the natural curvature until mouthpiece flange rests on the teeth.
Modest resistance will be met at the back of the oro pharynx. DO NOT use force! If the tube does not advance, either redirect the tube and attempt reinsertion after hyperoxygenation or withdraw and start over.
12. Secure the neck strap.
13. Inflate both cuffs simultaneously:
 - a. Using a sustained breath into the #1 Inflation Valve.
 - b. Ensure white cap is secure.
 - c. Use puffs of air to increase pressure in cuffs to improve seal.
 - d. Bag valve device inflation requires firm grip on tube # 1 since tubes do not match.
 - e. Positive pressure is not recommended.
14. Immediately attach bag-valve device and ventilate the #2 Short Green Tube and assess for chest rise. If the CHEST RISES, the #3 Long Clear Tube is in the esophagus. Continue ventilating through the #2 Short Green tube. Assess breath sounds, gastric sounds, and record.
15. If the chest DOES NOT rise after ventilating tube # 3, retry tube #2, the #3 Long Clear Tube may be in the trachea. If the chest DOES rise remove the stylet and ventilate through the #3 Long Clear Tube. During lung inflation, listen to both sides of the chest and over the stomach with a stethoscope.
16. Verify chest rise with each breath (ventilation). Auscultate over gastric, upper and lower lung lobes bilaterally, and mid-axillary bilaterally.
17. **LOOK, LISTEN, and FEEL** for adequate air exchange.
 - a. **LOOK** for chest rise and fall.
 - b. **LISTEN** - auscultate for air sounds over the stomach and both sides of the chest.
 - c. **FEEL** for good Bag-Valve Device compliance.
18. Continue ventilations with oxygen supplement through the appropriate tube.
19. After tube position is verified, air leakage must be identified. Trouble shoot by:
 - a. Increasing cuff pressures.
 - b. Increasing ventilation volumes.
 - c. Tightening neck strap.

DECOMPRESS/EVACUATE STOMACH IF NECESSARY

1. Passive Gastric Decompression, as needed for acute gastric distention ONLY if tube lies in the esophagus.
 - a. **DO NOT** interrupt ventilations while performing.
 - b. Measure and lubricate an 18 French Levine suction catheter.
 1. For approximate distance, measure distance from tip of tube # 3, to tip of ear lobe, earlobe to chin, and chin to xyphoid process.
 2. Mark this distance on catheter.
 3. Lubricate catheter with a water-soluble lubricant.
 - c. Insert catheter through tube # 3 and advance catheter into the stomach to the marked distance.
2. Allow stomach to decompress and remove catheter. Repeat as needed. Slow and gentle pressure on abdomen as may be necessary

REMOVAL and PROCEDURE

1. Indications the PtL® should be removed:
 - a. Victim regains consciousness.
 - b. Protective airway gag reflexes return.
2. Prepare suction device.
3. Turn patient on side (preferably left side) and make sure the stomach has been decompressed and gastric contents have been evacuated.
4. Open the White Port Cap on the #1 inflation valve to deflate both cuffs. Ensure white slide clamp is open.
5. Release neck strap.
6. Instruct patient to exhale. As patient exhales, remove the PtL® airway with a swift steady motion following natural curvature of airway. Simultaneously gently press on the stomach to assist the release of gastric contents.
7. Suction as needed.
8. Place patient on high flow, high concentration oxygen.
9. Continue to monitor patient for adequate ventilation.
10. Maintain patient position on the left lateral recumbent in order to monitor and ensure patent airway including vomitus / aspiration precautions.

REPLACING THE PtL® WITH AN ENDOTRACHEAL TUBE (ALS Assist)

1. Pass a gastric levine tube and apply suction to verify that the stomach has been decompressed.

2. To pass an ET tube while ventilating through the # 2 short green tube:
 - a. Pinch the pilot balloon inflation line with the slide clamp (close the slide clamp) and open the white cap on the # 1 inflation valve line. The large oral cuff will deflate to atmospheric pressure.
 - b. Insert laryngoscope and quickly intubate the trachea around the PtL® Airway.
 - c. Remove PtL® if intubation is successful.
3. If unable to intubate, deflate cuffs by opening the white slide clamp, remove the PtL® and intubate patient.

GENERAL CONSIDERATIONS

Hypoxia will occur from interrupted ventilations during insertion.

Limit attempts to less than 30 seconds.

Do not administer drugs through the short green tube (#2) or the long clear tube (#3) if esophageal intubation occurs.

Leave the stylet in place unless except when patient is tracheally intubated and during suctioning patient.

TROUBLE SHOOTING:

Make sure white port cap is closed or the oropharyngeal cuff will deflate.

Make sure slide clamp control is open. This slide clamp control allows endotracheal intubation without removal of the PtL® by allowing the proximal cuff to deflate while the distal cuff remains inflated.

Frequently inspect Large (Proximal) Cuff and Pilot Balloon for leaks.

Dentures, braces, or foreign bodies may cause tearing.

Make sure the neck strap is secure.

Re-inflate the cuffs or remove airway as needed.

SUCTIONING

GOAL

Provide a clear airway by removing foreign matter, either solid or liquid

OBJECTIVE

Given a simulated patient, the EMT student will be able to assemble equipment, identify the need, and demonstrate proper suctioning techniques within 1 minute.

EQUIPMENT

Body substance isolation
Suction device and tubing
Rigid suction tip and assorted flexible catheters

PROCEDURE:

1. Check, assemble equipment, and take body substance isolation precautions.
2. Determine proper suction device and attach tubing.
 - a. use rigid catheter when suctioning mouth of an infant or child
 - b. avoid touching back of throat or stimulating gag reflex
 - c. to suction nasal passages, use bulb suction or French catheter with low to medium suction
3. Turn on and test suction unit by crimping suction tubing to ensure at least 300mmHg vacuum. Use only 1/2 power on infants.
4. Measure length of suction tip from corner of mouth to ear lobe
5. Insert catheter into oro/naso pharynx without suction and be careful not to stimulate gag reflex.
6. Activate suction while removing the catheter from the airway. Move the catheter tip side to side.
7. Suction for no longer than 15 seconds at a time until the airway is clear.
 - a. In infants and children, suction no longer than 10 seconds.
 - b. If the patient has secretions or emesis that cannot be removed quickly and easily by suctioning, the patient should be log rolled to the left and the oropharynx should be cleared.
 - c. If the patient produces frothy secretions more rapidly than the suctioning can clear, suction for 15 seconds. Artificially ventilate for two minutes, then suction for 15 seconds. Repeat as necessary.
8. Always hyperventilate and administer high flow oxygen after suctioning.

CONSIDERATIONS

No matter what the patient condition, the airway must remain patent at all times.

Suction to remove blood, other liquids and or food particles, teeth, glass, vomit and any other particle that can pass through the suction catheter.

Some suction devices are inadequate for removing large, obstructing, solid objects like teeth, foreign bodies and food.

Suction immediately when a gurgling sound is heard with artificial ventilation.

NEBULIZERS

GOAL

To relieve the bronchospasm due to allergens

OBJECTIVE

Given a simulated patient, the EMT student will be able to assemble nebulizers, identify the need, and demonstrate the proper technique for nebulizer treatment within 4 minutes.

INDICATIONS

Bronchial asthma and bronchospasm in emphysema and chronic bronchitis

EQUIPMENT

Sterile Saline
Oxygen Connector Tubing
Supplemental Oxygen
Hand-Held Nebulizer cup with lid
T-Piece
Mouthpiece
Medication

PROCEDURE

1. Obtain orders from medical control to provide nebulizer treatment.
2. Gather, check equipment, and take body substance isolation precautions.
3. Briefly explain the procedure to the patient.
4. Determine the correct medication, expiration, clarity, and dosage to be administered.
5. Open the lid of the nebulizer and place the prescribed medication into the nebulizer.
6. Carefully replace the lid to the nebulizer cup and securely attach the T-piece to the nebulizer.
7. Insert the mouthpiece into the T-piece.
8. Connect the connector tubing to the unit delivering oxygen source.
9. Connect the other end of the connector tubing to the nebulizer.
10. Turn the oxygen flow rate to:
 - a. 6 liters per minute, **or**
 - b. until appropriate mist is achieved, **or**

- c. according to the flow rate established in the updraft manufacturer's recommendations.
11. Instruct the patient to sit up as straight as possible for maximum chest expansion.
 12. Instruct the patient to hold the nebulizer upright and to close lips around the mouthpiece.
 13. Instruct the patient to inhale deeply and to hold breath for 10 seconds before exhaling if possible.
 14. Administer half of the medication.
 15. Assess patient for effect.
 16. Administer the remaining medication.
 17. Remain with the patient until the treatment is completed.
 18. Document how well the patient has tolerated the treatment.
 - a. Assess and record breath sounds before and after each treatment.
 - b. Note times each procedure was started and completed.
 - c. Gather vital signs and focused reassessment and record findings.
 - d. Patient may deteriorate and need positive pressure artificial ventilation.
 - e. Include any signs of the medication's effects.
 19. Administer additional medication as ordered by Medical Control.

INHALERS

GOAL

Provide breathing relief for patients with asthma experiencing difficulty breathing

OBJECTIVE

Given a simulated patient, the EMT student will be able to assemble the device and administer the aerosol medication within 1 minute.

EQUIPMENT

Metered Dose Inhaler
Container of Medication
Spacer device

PROCEDURE

1. Obtain orders from medical direction either on-line or off-line.
2. Assure right medication, right patient, right route, and the patient is alert enough to use inhaler. Confirm that the patient is having breathing difficulty. Secure the airway, administer high flow oxygen, and assist ventilation as necessary.
3. Check the expiration date of the inhaler.
4. Determine if the patient has taken a prescribed beta-agonist inhaler.
5. Ensure that the inhaler is at room temperature or warmer. An inhaler used straight out of the refrigerator may worsen bronchospasm.
6. Shake the inhaler vigorously several times and before each use to mix the medication and the propellant.
7. Remove oxygen adjunct from patient.
8. Remove the cap from the mouthpiece and check mouthpiece for foreign objects.
9. Attach the medication canister fully and firmly into the actuator: **DO NOT twist the canister.**
10. Test the aerosol by spraying into the air.
11. Remove oxygen from the patient and have the patient exhale deeply.
12. Have the patient place mouthpiece fully into the mouth with his lips. Attach the spacer over the mouthpiece to enhance good dispersal of the medication into the lungs.
13. Ask patient to breathe in deeply and slowly through his mouth while fully depressing the top of metal canister with index finger.
14. Ask the patient to hold his breath as long as they comfortably can (at least 3 – 5

seconds). Before breathing out, remove the inhaler from the patient's mouth and release your finger from canister.

15. After one to three minutes of medication administration, reassess the condition of the patient and record.
 - a. Gather vital signs and focused reassessment and record findings.
 - b. Patient may deteriorate and need positive pressure artificial ventilation.
 - c. Assess and record breath sounds before and after each treatment.
 - d. Note times each procedure was started and completed.
 - e. Include any signs of the medication's effects.
16. If patient's condition has not improved, shake inhalation aerosol again and repeat steps 12 through 14. Repeat only once.
17. Clean inhaler with alcohol prep pad.

GENERAL CONSIDERATION

The spacer device is an attachment between the inhaler and the patient that allows for more effective use of medication.

Contents of Inhalation Aerosol are under pressure.

- Do not puncture.
- Do not use or store near heat or open flames.
- Exposure to temperatures above 120 degrees F may cause bursting.
- Never throw container into fire or incinerator.

When not in use, keep cap on mouthpiece.

When not in use, store between 15 degrees C and 30 degrees C (59° and 86° F).

Failure to use aerosol product within the recommended temperature range may result in improper dosing.

Infant and Child Considerations:

- use of hand held inhalers is very common in children.
- retractions are more commonly seen in children than adults.
- cyanosis is a late finding in children.
- very frequent coughing may be present rather than wheezing in some children.
- emergency care with usage of handheld inhalers is the same of the indications for usage of inhalers are met by the ill child.

Reassessment Strategies include:

- Gather vital signs and focused assessment
- Patient may deteriorate and need positive pressure artificial ventilation

PATIENT ASSESSMENT

VITAL SIGNS

GOAL

Determine the systolic and diastolic pressure exerted against the walls of the arteries by auscultation within +/- 10mm Hg

OBJECTIVE

Given a simulated patient, the EMT student will be able to determine the blood pressure within 1 minute.

EQUIPMENT

Pen and Report Form
Sphygmomanometer
Stethoscope
Bandage Scissors

PROCEDURE

1. Take body substance isolation precautions.
2. Calm and reassure the patient. Explain all procedures prior to performing them.
3. Determine correct *cuff* size. The cuff bladder should be 20 percent wider than the diameter of the extremity
4. Apply the center of the bladder over the brachial artery of the patient's left arm if not contraindicated by injuries or patient's position. Place the lower edge of the cuff, with its tubing connections, about 1 inch above the antecubital fossa. Wrap cuff evenly and snugly. Do not place the cuff over clothing or allow rolled up clothing to constrict arm. Cut away clothing if necessary. Position the gauge so that the viewer has a direct line of sight for an accurate reading.
5. Position patient's arm level with his heart.
6. Place stethoscope earpiece in your ears. The earpieces should be facing slightly forward in order to allow maximum benefit.
7. While palpating the brachial or radial pulse with your fingertips, observe the gauge, close the thumb valve, and begin squeezing the bulb rapidly but smoothly until the sound of the pulse you are palpating disappears. Inflate 30 mm Hg higher.
8. Place diaphragm of stethoscope over the brachial artery firmly enough to obtain a seal: but, lightly enough to avoid constricting the artery. The diaphragm is applied just below the cuff but not touching the cuff or tubing.
9. Open the thumb valve slightly and maintain a constant deflation rate of approximately 2mmHg per second.

10. While observing the gauge, listen for the onset of a dull tapping sound that is heard for two consecutive beats and note the gauge reading. This is the systolic blood pressure. A single beat is ignored and not considered the systolic blood pressure.
11. Continue releasing the air until there is a disappearance of sound. This is the diastolic pressure. Observe the gauge reading.

NOTE: On some patients, the tapping sound can be heard down to zero or below the true diastolic. In this case, listen for when the tone changes from taps to dull, muffed thuds and record this as the diastolic blood pressure.

12. Listen throughout the entire range of deflation until 20mm Hg below the level of the diastolic reading; then, fully deflate the cuff by opening the thumb valve.
13. Remove the cuff and stethoscope.
13. Record the two blood pressure readings, arm utilized, and the time as follows: 130/84-L.A.--14:30.

NOTE: Blood pressure is recorded in even numbers, i.e. 130/84. If the gauge reading is between two indicator lines, use the upper number.

15. Continue to reassure patient during transport and:
 - a. monitor vitals at least every 5 minutes in critical or unstable patients.
 - b. monitor vitals at least every 15 minutes in non-critical or stable patients.

GENERAL CONSIDERATION

In certain situations, the systolic blood pressure may be achieved by palpation. Feel for return of pulse with deflation of the cuff.

PATIENT ASSESSMENT

GOAL

To identify problems / conditions which will direct the course of the prehospital interventions and transportation of the sick or injured patient

OBJECTIVE

Given a simulated patient, the EMT student will be able to perform a patient assessment within 5 minutes.

EQUIPMENT

Body Substance Isolation (gloves, mask, eye protection etc.)
 Blood Pressure Cuff and Stethoscope
 Pen Light
 Ink Pen

I. REVIEW DISPATCH INFORMATION

Who, what, when, where, how much/many

II. SCENE SIZE UP

Take body substance isolation precautions.
 Determine if the scene is safe for the EMT and partner.
 Determine if there are any potential hazards.
 Determine the mechanism of injury (MOI)/nature of illness (NOI).
 Determine the number of patients.
 Determine need for additional help.
 Consider stabilization of spine.

III. INITIAL ASSESSMENT

Determine general impression of patient prior to verbal or physical contact.
 Introduce self with service, level of training and gain consent to treat.

Gain consent by asking: "May I treat you?"

Determine chief complaint of patient if possible /apparent life threats. Ask patient, family, friends, and bystanders if necessary.

Determine responsiveness/level of consciousness (AVPU).

Assess Airway & Breathing.

- a. Provide interventions for airway problems.
- b. Initiate appropriate oxygen therapy.
- c. Assure adequate ventilation.

Assess Circulation.

- a. Assess/control major bleeding.
- b. Assess pulse.
- c. Assess skin (color, temperature and condition).

Treat any immediate life threatening conditions such as, ABC problem, airway blockage, or flail chest, anaphylaxis, etc.

Determine priority using patient's status of ABC's, LOC, and chief complaint.

Determine if medical or trauma, high or low priority, and transport decision.

IF TRAUMA – HIGH PRIORITY:**IV. Perform Rapid Trauma Assessment**

- A. Assess the head for DCAP-BTLS.
- B. Assess the neck for DCAP-BTLS, JVD, and tracheal deviation.
- C. Assess the chest for DCAP-BTLS.
- D. Assess the abdomen for pulsating mass, point and rebound tenderness, distention, and DCAP-BTLS.
- E. Assess the pelvic area for DCAP-BTLS.
- F. Assess the lower extremities for DCAP-BTLS and distal PMS for presence and equality.
- G. Assess the upper extremities for DCAP-BTLS and PMS.
- H. Assess the posterior aspect of the body for DCAP-BTLS.
- I. Assess baseline vital signs: blood pressure, pulse and respirations.
- J. Obtain SAMPLE history from bystander, family, or friends prior to leaving.
- K. Provide necessary medical care and prepare for transport.

V. Transport

- A. Treat secondary injuries as priority allows.
- B. Perform Detailed Physical Exam.
 - 1. Assess the head for DCAP-BTLS, eyes, ears, nose, and mouth/throat.
 - 2. Assess the neck for DCAP-BTLS, JVD, and tracheal deviation.
 - 3. Assess the chest for DCAP-BTLS, auscultate breath sounds, rate, quality, and expansion equality.
 - 4. Assess the abdomen for DCAP-BTLS.
 - 5. Assess the pelvic area for DCAP-BTLS.
 - 6. Assess the lower extremities for DCAP-BTLS and distal PMS for presence and equality.
 - 7. Assess the upper extremities for DCAP-BTLS and PMS.
 - 8. Assess the posterior aspect of the body for DCAP-BTLS.
 - 9. Re-assess vital signs: blood pressure, pulse, and respirations.
- C. Perform Ongoing Assessment.
 - 1. Repeat the Initial Assessment.
 - 2. Repeat Vitals.
 - 3. Check Interventions.

NOTE: Re-evaluate vital signs and ABCD's at least every 5 minutes on critical patients and at least every 15 minutes on non-critical patients.

IF TRAUMA – LOW PRIORITY:**IV. Perform Focused History Physical Exam**

- A. Assess history of present illness, chief complaint with signs and symptoms.
 - 1. Assess SAMPLE History.
 - 2. Perform Further Patient Assessment on Area of Chief Complaint:
 - a. assess the head if necessary.
 - b. assess the neck if necessary.
 - c. assess the chest if necessary.
 - d. assess the abdomen if necessary.
 - e. assess the pelvis if necessary.

- f. assess the extremities if necessary.
 - g. assess the posterior body if necessary.
 - 3. Assess baseline vital signs.
 - 4. Provide emergency medical care based on signs and symptoms in consultation with either online or offline medical direction.
- B. Transport
 - 1. Treat secondary injuries as priority allows.
- C. Perform Detailed Physical Exam
 - 1. Assess DCAP BTLS including:
 - a. assess the head if necessary.
 - b. assess the neck if necessary.
 - c. assess the chest if necessary.
 - d. assess the abdomen if necessary.
 - e. assess the pelvis if necessary.
 - f. assess the extremities if necessary.
 - g. assess the posterior body if necessary.
- D. Perform Ongoing Assessment.
 - 1. Repeat the Initial Assessment.
 - 2. Repeat Vitals.
 - 3. Check Interventions.

NOTE: Re-evaluate vital signs and ABCD's at least every 5 minutes on critical patients and at least every 15 minutes on non-critical patients.

IF MEDICAL – HIGH PRIORITY:

IV. Perform Rapid Assessment

- A. Assess the head for DCAP-BTLS.
- B. Assess the neck for DCAP-BTLS, JVD, tracheal deviation.
- C. Assess the chest for DCAP-BTLS.
- D. Assess the abdomen for pulsating mass, point and rebound tenderness, distention, DCAP-BTLS.
- E. Assess the pelvic area for DCAP-BTLS.
- F. Assess the lower extremities for DCAP-BTLS and distal PMS: for presence and equality.
- G. Assess the upper extremities for DCAP-BTLS and PMS.
- H. Assess the posterior aspect of the body assessing for DCAP.
- I. Assess baseline vital signs: blood pressure, pulse and respirations.
- J. Obtain SAMPLE history from patient if possible, bystander, family, or friends prior to leaving.
- K. Obtain OPQRST history from patient if possible, bystander, family, or friends prior to leaving.
- L. Provide necessary medical care and prepare for transport.

V. Transport

VI. Perform Ongoing Assessment

- A. Repeat the initial assessment.
- B. Repeat vitals.
- C. Check interventions.

NOTE: Re-evaluate vital signs and ABCD's at least every 5 minutes on critical patients and at least every 15 minutes on non-critical patients.

IF MEDICAL – LOW PRIORITY:

IV. Perform Focused History Physical Exam

- A. Assess history of present illness, chief complaint with signs and symptoms.
 - 1. Assess O-P-Q-R-S-T
 - 2. Assess SAMPLE history.
 - 3. Perform further patient assessment on area of chief complaint.
 - a. Assess the head if necessary.
 - b. Assess the neck if necessary.
 - c. Assess the chest if necessary.
 - d. Assess the abdomen if necessary.
 - e. Assess the pelvis if necessary.
 - f. Assess the extremities if necessary.
 - g. Assess the posterior body if necessary.
 - 4. Assess baseline vital signs.
 - 5. Provide emergency medical care based on signs and symptoms in consultation with either online or offline medical direction.

V. Transport

- a. Treat secondary illness as priority allows.

VI. Perform Ongoing Assessment

- a. Repeat the initial assessment.
- b. Repeat vitals.
- c. Check interventions.

NOTE: Re-evaluate vital signs and ABCD's at least every 5 minutes on critical patients and at least every 15 minutes on non-critical patients

REMEMBER: Things not looked for are often not found.

PATIENT ASSESSMENT

Review Dispatch Information

Scene Size Up

BSI
Safe Scene / Hazards
Determine N.O.I. / M.O.I.
Number of Patients / Additional Help
Consider C-Spine

Initial Assessment

General Impression
Introduction
Determine Chief Complaint
Determine Level of Consciousness (AVPU)
Assess ABC's
Provide Immediate Life threatening Interventions
Prioritize using ABC, LOC, and C/C
Determine Trauma vs. Medical
Determine Priority - High vs. Low

Trauma

Medical

High Priority

Low Priority

Low Priority

High Priority

Rapid Trauma Assessment (DCAP-BTLS)
Baseline Vitals
S.A.M.P.L.E.
Critical Interventions
Prepare for Transport

Focused History
Assess Area of Chief Complaint
S.A.M.P.L.E.
Baseline Vitals
Provide Interventions

Focused History
Assess Hx of Present Illness
O.P.Q.R.S.T.
S.A.M.P.L.E.
Further Assess C/C Areas PRN
Baseline Vitals
Provide Interventions

Rapid Medical Assessment (DCAP-BTLS)
Baseline Vitals
S.A.M.P.L.E.
O.P.Q.R.S.T.
Critical Interventions
Prepare for Transport

Transport

Treat secondary injuries as Priority Allows

**Detailed Exam
If High
Priority**

**Detailed Exam
If Low Priority
Trauma**

Repeat R.T.A+HEENT
Auscultate
DCAP-BTLS Plus
Reassess Vitals

Reassess C/C Areas PRN

**Ongoing
Assessment**

Repeat Initial Assessment
Repeat Vital Signs
Check Interventions

Transport
Treat Secondary Illness as Priority Allows

Pneumonics for Focused History

Allergic Reaction	Behavioral	Cardiac	Environmental
History Exposed to How Exposed Effects Progression Interventions	How do you feel Suicidal tendencies Threat to self or others Medical problems Intervention	Onset Provokes Quality Radiates Severity Time Interventions	Source Environment Duration Loss of Conscious Effect - General or Local
Mental Status	Obstetrics	Poisoning / OD	Respiratory
Describe Episode Onset Duration Symptoms Trauma Interventions Seizures Fever	Are you pregnant How long Pain or Contractions Bleeding or discharge Need to push Last period Crowning	Substance When Exposed How much Over what time period Interventions Estimated weight Effects	Onset Provokes Quality Radiates Severity Time Interventions

Other Pneumonics**S.A.M.P.L.E.**

Signs and Symptoms
Allergies
Medications
Past Medical History
Last Meal
Events Prior To

O.P.Q.R.S.T.

Onset
Provokes
Quality
Radiates
Severity
Time

A.V.P.U.

Alert
Verbal
Pain
Unresponsive

D.C.A.P.-B.T.L.S.

Deformities
Contusions
Abrasions
Penetrations
Burns
Tenderness
Lacerations
Swelling

T.I.C.

Tenderness
Instability
Crepitus

INFORMATION REPORTED TO THE HOSPITAL BY EMS PERSONNEL

GOAL

Provide effective radio (pre-arrival) and transfer of information to receiving personnel

OBJECTIVE

Given a simulated situation and patient information, the EMT student will be able to effectively communicate with the dispatcher and hospital.

EQUIPMENT

Two-way radio
Patient Care Report

PROCEDURE

1. Ensure radio is on and volume is properly adjusted. Monitor (listen to) the channel at least 15 seconds before transmitting to avoid interfering with other radio traffic.
2. Plan message before pushing the transmit switch. This will keep the transmission brief and precise. The radio report is to take less than 30 seconds. The obvious exception is when the EMT needs to consult Medical Direction.
3. Press the transmit button (PTT) on the radio microphone, then wait 2 seconds before beginning the message. This will allow the radio to charge to full power.
4. Hold the microphone 2" - 3" slightly lower than the level of your mouth. Speak clearly and calmly into the microphone. Speak at a moderate and understandable rate.
5. Address the unit being called; then give the name of the unit calling (and number, if appropriate) where the transmission is being originated.
6. Acknowledge a transmission as soon as possible and utilize the "echo" principle. Especially use the "echo" principle when receiving directions from medical control. This confirms accurate reception and understanding.
7. Speak clearly and slowly, in a monotone voice and clear text. Use plain English. Do not use meaningless phrases, slang, or complex codes. Avoid words that are difficult to hear, such as "yes" and "no." Use "affirmative" and "negative."
8. Keep all messages brief and do not waste airtime. Do not use meaningless phrases like "be advised" or "show me".
9. Protect patient privacy by not using patient's name, social security number, insurance status, or any other potentially personally identifying information.
10. Avoid showing negative emotions, such as anger or irritation, when transmitting. Courtesy is presumed; therefore, saying "please" or "thank you" wastes air time.

11. When transmitting a number with two or more digits, say the entire number first and then each digit separately.
12. Do not use profanity on the radio. This is a violation of FCC rules and can result in substantial fines and even loss of the service radio license.
13. Use EMS radio frequencies for EMS communications. Do not use these frequencies for any other type of communications.
14. Attempt to reduce background noise as much as possible. Move away from wind, noisy motors, or tools.
15. Roll up windows. Turn music and other distracters down or off.
16. When the transmission is finished, indicate by saying "over". Get confirmation the message was received.
17. Refer to local communications procedures and protocols.

Radio Report Format as approved by the Tennessee EMS Telecommunications Committee and the Tennessee EMS Board should include:

- a. ambulance unit number, and if requesting orders, the name of the EMT.
- b. patient's age, sex, and if a pediatric patient, include the pediatric patient's weight.
- c. medical patients, patient's chief complaint and nature of illness and for trauma patients, mechanism of injury and suspected injuries.
- d. most recent complete set of vital signs if **NOT** within normal limits.
- e. treatment provided.
- f. only pertinent and **brief** history that will affect triage status.
- g. patient's physician if pertinent.
- h. for transfers, the referring facility/referring and receiving physicians.
- i. estimated time of arrival.

Radio Report Shall Not Include:

- a. sequential sets of vital signs if patient's vitals are stable.
- b. entire medical history.
- c. allergies unless pertinent to a medication ordered by medical control.
- d. patient's name, social security number, insurance status, or any other personally identifying information.
- e. EMS personnel are required to know and adhere to the patient privacy rule under the Health Insurance Portability and Accountability Act (HIPPA). See Appendix D.

Patient information shall be provided in writing to the receiving hospital to include:

- a. identification of the ambulance service by name, address, and telephone number.
- b. chief complaint (or reason for transfer by ambulance).
- c. patient's vitals signs including blood pressure, pulse, respiration, and pupils (equal, unequal, dilated, or constricted) when appropriate LOC and pain or other requested information.
- d. patient identification information, including name, gender, race, and date of birth
- e. date of transport noting the time of arrival on scene and the time of transfer to the receiving facility.
- f. signatures of the attending EMT or EMT-Paramedic, a representative of the receiving facility, and name of any health professional that provided orders for care.

When Communicating With Medical Control Physician:

- a. give an accurate and complete report.
- b. "echo" orders and question unclear or inappropriate orders.
- c. report back when orders have been carried out and keep the physician informed, describing the patient's response.
- d. protect patient privacy.

NOTE: Communications whether written or spoken is a legal document. Radio communication and the written patient care report should coincide.

BANDAGING

AMPUTATION

GOAL

To control bleeding of the stump of an amputated limb

OBJECTIVE

Given a simulated patient, the EMT student will be able to apply a pressure dressing and bandage to the stump of an amputated limb within 5 minutes.

EQUIPMENT:

Body substance isolation
Sterile dressings large enough to cover the wound
1 or 2 Roller gauze
Tape
Triangular Bandages

PROCEDURE:

1. Take body substance isolation precautions.
2. Place a bulky dressing over the wound and apply direct pressure.
3. Apply roller gauze bandage by:
 - a. anchoring roller gauze immediately proximal to wound.
 - b. wrapping bandage to secure dressing to wound applying pressure as you wrap.
 - c. with arm at 45 degree angle, secure the wrap proximal to the elbow with "figure 8" technique to apply additional pressure.
4. Secure end of bandage with tape or by tucking into bandage.
5. Elevate injured area to a 45 degree angle with a sling and swathe.
6. Reassess wound for bleeding and reinforce as needed with more dressing and bandage.

GENERAL CONSIDERATIONS

Flexing the proximal joint and wrapping the roller gauze proximal to the joint may apply more pressure to wound site and aid in controlling bleeding.

AMPUTATED PART

GOAL

Preserve the amputated part for possible re-implantation

OBJECTIVE

Given a simulated amputated part, the EMT student will be able to prepare it for transport with the patient within 3 minutes.

EQUIPMENT

Body substance isolation
Dressing large enough to cover amputated part
Saline Solution
Plastic bag large enough to hold part

PROCEDURE:

1. Take body substance isolation precautions.
2. Locate amputated part and remove loose debris.
3. Wrap amputated part in dressing moistened in saline.
4. Place in plastic bag and keep amputated part cool if possible, but, never place directly on ice.
5. Transport with the patient.

EYELID AVULSION WITH EYEBALL EXTRUDING

GOAL

To control bleeding of eyelid avulsion and protect extruded eyeball

OBJECTIVE

Given a simulated patient, the EMT student will be able to apply a dressing and bandage to the avulsed eyelid and extruded eyeball within 5 minutes.

EQUIPMENT:

Body substance isolation	Sterile 4x4 gauze
Gauze Ring (optional)	Disposable cup
Roller bandage	Sterile saline

PROCEDURE

1. Gather equipment and explain procedure to patient.
2. Take body substance isolation precautions.
3. Maintain cervical spine control.
4. Control bleeding of avulsed eyelid avoiding pressure to eyeball.
5. Fold a moistened 4x4's or use a ring of gauze and place around extruded eyeball
6. Moisten a 4x4 with sterile saline and place over injured eyeball.
7. Cover moistened 4x4 and injured eyeball with cup.
8. Place 4x4 pads over uninjured eye to ensure eye does not open. DO NOT leave a patient alone who has both eyes covered.
9. Secure 4x4 pads (or ring) and cup to the head utilizing roller bandage. Do not cover the ears.
10. Reassess bleeding and reinforce as needed.

FLAIL CHEST

GOAL

Properly stabilize a flail segment of the chest and provide supportive care for this patient

OBJECTIVE

Given a simulated patient, the EMT student will be able to recognize and stabilize a flail chest segment within 3 minutes.

EQUIPMENT

Body substance isolation
Pillow or large bulky dressing
Tape
Triangle bandages
Oxygen with delivery device

PROCEDURE:

1. Gather equipment.
2. Take body substance isolation precautions.
3. Apply high flow oxygen with non-rebreather mask.
4. Expose injured site.
5. Place pillow, bulky dressing, or sling and swathe (option for anterior flail segments) over the flail segment.
6. Secure device used to stabilize the chest with tape, sling &, swathe triangle bandages.
7. Reassess breathing and record.
8. Transport patient in a semi-fowler's position or position of comfort.

GENERAL CONSIDERATION

Place all patients on high flow oxygen.

Clamshell devices are contra indicated by load and go situation.

HEAD BANDAGE

GOAL

To control bleeding of a head wound

OBJECTIVE

Given a simulated patient, the EMT student will be able to apply a dressing and bandage to a head wound in 3 minutes.

EQUIPMENT

Body substance isolation
Dressing large enough to cover wound
Roller gauze
Tape

PROCEDURE

1. Gather equipment.
2. Take body substance isolation precautions.
3. Maintain c-spine control.
4. Assess LOC, pupillary response, and nose and ears for presence of cerebral spinal fluid and record.
5. Apply direct pressure with dressing to wound without depressing the skull.
6. Apply roller gauze (bandage) to hold dressing in place.
7. Reassess LOC, pupils and bleeding and record.
8. Reinforce dressing and bandage as needed.

GENERAL CONSIDERATIONS

Apply direct pressure to wound to control bleeding only if depressed skull fracture is not suspected.

Control bleeding from the edges of wounds by direct pressure.

IMPALED OBJECTS

GOAL

To control bleeding at wound site, and provide stabilization of impaled object

OBJECTIVE

Given a simulated patient, the EMT student will be able to apply a dressing to the wound and stabilize the impaled object within 5 minutes.

EQUIPMENT

Body substance isolation
Dressings large enough to cover the wound and surround the impaled object
Tape
Roller gauze

PROCEDURE

1. Gather equipment.
2. Take body substance isolation precautions.
3. Place dressing over the wound and around the impaled object.
4. Apply roller gauze (bandage) to hold the dressing in place and secure the impaled object. Secure in three planes in an attempt to ensure stabilization of the impaled object.
5. Tape or tuck loose ends of bandage.
6. Re-evaluate for bleeding and record.
7. Reinforce dressing and bandage as needed.

GENERAL CONSIDERATIONS

Pressure may be used around wound to aid in bleeding control.

Do not wrap bandage over impaled object.

Impaled object may be removed ONLY if airway is compromised.

BLEEDING CONTROL AND SHOCK MANAGEMENT

GOAL

Provide control of external bleeding and proper treatment for a patient in hypovolemic shock

OBJECTIVE

Given a simulated patient needing bleeding control/shock management, the EMT student will be able to provide treatment to control external bleeding and know the steps to treat for hypovolemic shock.

EQUIPMENT

Body substance isolation
Dressings and Bandages
Roller gauze
Tape
Blankets
Supplemental Oxygen with appropriate adjunct/delivery devices

PROCEDURE

1. Gather equipment and take body substance isolation precautions.
2. Maintain airway/artificial ventilation.
3. Control Bleeding: (4 essential steps)
 - a. apply finger tip (direct) pressure on point of bleeding with dressing.
 - b. elevation of the bleeding extremity should be used secondary to and in conjunction with direct pressure.
 - c. if diffuse bleeding is discovered, increase pressure with additional dressings and bandages.
 - d. pressure points may be used in upper and lower extremities in conjunction with direct pressure and elevation.
 - i Upper extremity – brachial artery
 - ii Lower extremity – femoral artery
4. Methods to control external bleeding if direct pressure is ineffective.
 - a. Splints
 - i. reduction of motion of bone ends will reduce the amount and aggravation of tissue damage and bleeding associated with a fracture
 - ii. splinting will allow prompt control of bleeding associated with a fracture
 - b. Pressure Splints
 - i. pneumatic counterpressure devices (PASG) may be used as an effective pressure splint to help control severe bleeding due to massive soft tissue injury to the lower extremities or traumatic pelvic hemorrhage.

- c. Tourniquet
 - i. use only as a last resort to control bleeding of an amputated extremity when all other methods of bleeding control have failed
 - ii. application of a tourniquet will cause permanent damage to nerves, muscles, and blood vessels resulting in the loss of an extremity
 - iii. procedures for applying a tourniquet
 - (a) use a bandage 4 inches wide and 6 – 8 layers deep.
 - (b) wrap it around the extremity twice at a point proximal to the bleeding but as distal on the extremity as possible.
 - (c) tie one knot in the bandage and place a stick or rod on top of the knot and tie the ends of the bandage over the stick in a square knot.
 - (d) twist the stick until the bleeding stops.
 - (e) once the bleeding has stopped, secure the stick or rod in position.
 - (f) notify other emergency personnel who may care for the patient that tourniquet has been applied.
- write "TK" on the patient's forehead and the time the tourniquet was applied:
 - (g) document the use of a tourniquet and the time applied in the prehospital patient report.
 - iv. a continuously inflated blood pressure cuff may be used as a tourniquet until bleeding stops.
 - v. precautions with the use of a tourniquet.
 - (a) use a wide bandage and secure tightly.
 - (b) never use wire, rope, a belt, or any other material that may cut into the skin and underlying tissue.
 - (c) do not remove or loosen the tourniquet once it is applied unless directed to do so by medical direction.
 - (d) leave the tourniquet in open view (DO NOT cover).
 - (e) do not apply a tourniquet directly over any joint, but as close to the injury as possible.

GENERAL CONSIDERATIONS:

Treat to Prevent Shock (hypoperfusion):

- a. body substance isolation precautions.
- b. maintain airway/artificial ventilation and apply high flow oxygen.
- c. control any external bleeding.
- d. if signs of shock (hypoperfusion) are present and the lower abdomen is tender and pelvic injury is suspected, apply and inflate the PASG if approved by medical direction.

- e. elevate the lower extremities approximately 8 to 12 inches (trendelenburg). If the patient has serious injuries to the pelvis, lower extremities, head, chest, abdomen, or neck, elevate the spine board.
- f. splint any suspected bone or joint injuries.
- g. prevent loss of body heat by covering the patient with a blanket and placing a blanket under the patient.
- h. immediate transport and perform on going assessment.

SPLINTING

GENERAL RULES FOR SPLINTING

NOTE: These rules are applicable for all splinting whether or not they are specifically listed in each skill.

- * Assess pulse, motor, and sensation (PMS) distal to the injury prior to and following splint application and record findings.
- * Immobilize the joint above and below the injury.
- * Remove or cut away clothing. Do not splint prior to visualization of site.
- * Cover open wounds with a sterile dressing. Apply moist dressing to protruding bones.
- * If circulation is impaired, align with gentle traction before splinting unless pain is significantly increased.
- * Splint from distal to proximal unless otherwise noted.
- * Do not intentionally replace protruding bones.
- * Pad each splint to prevent pressure and discomfort to the patient.
- * Tie knots to the patient's lateral side, preferably in a void area.
- * Pad void or pressure areas.
- * Splint the patient before moving whenever possible.
- * Splinting must immobilize the joint above and below the fracture or the bone above and below a dislocated joint.
- * When in doubt, splint.
- * If patient has signs of hypoperfusion, align and quickly secure normal anatomical position on a long spine board and transport.
- * Elevate and apply ice to injuries involving extremities.

SLING AND SWATHE

GOAL

To provide immobilization to an injured upper extremity

OBJECTIVE

Given a simulated patient, the EMT student will be able to apply a sling and swathe within 5 minutes.

EQUIPMENT

Body substance isolation
Triangular bandages

PROCEDURE

1. Gather equipment.
2. Take body substance isolation precautions.
3. Expose the injury site.
4. Assess pulse, movement, & sensation (PMS) distal to injury and record.
5. Gently position forearm and maintain support of extremity until sling is secured. (refer to elevation guidelines)
6. Properly position triangular bandage between the flexed forearm and torso with the point of the triangular bandage toward the elbow. Bring the ends of the bandage behind the neck. Drape the end of triangular across the uninjured shoulder. Tie the knot on the opposite side from the injury, padding appropriately. The sling should create a cradle effect.
7. Secure the point of the triangular with a knot or pin. Ensure that the elbow is maintained in the sling at all times.
8. Apply the swathe, approximately 3 inches in width, around the distal aspect of the injured humerus.
 - a. Tie the swathe in such a manner that the knot does not create pressure.
 - b. Pad as necessary.
9. Reassess pulse, movement, & sensation (PMS) distal to the injury and record.

GENERAL CONSIDERATIONS

The swathe should not be in contact with the suspected fracture site.

Tie knots in void areas and pad as needed.

Utilize at least two swathes for better immobilization.

Two swathe tied together may be needed for larger patient.

ELEVATION GUIDELINES:

- a. Forearm - 60 degrees
- b. Humerus - 90 degrees
- c. Clavicle - 90 degrees
- d. Amputation - 45 degrees

FOOT OR ANKLE INJURY

GOAL

To provide stabilization to an injured foot or ankle

OBJECTIVE

Given a simulated patient, the EMT student will be able to apply a splint to the injured ankle or foot within 5 minutes.

EQUIPMENT

Body substance Isolation
One Pillow or blanket
Three triangular bandages or roller gauze

PROCEDURE:

1. Gather necessary equipment.
2. Take body substance isolation precautions.
3. Expose the injury site.
4. Assess pulse, movement, and sensation (PMS) distal to the injury and record.
5. Place foot in middle of pillow or blanket and fold around foot.
6. Secure pillow or blanket with the three triangular bandages or roller gauze, distal to proximal. DO NOT cover the toes. Leave them exposed to assess PMS.
7. Reassess pulse, movement, and sensation (PMS) distal to the injury and record.
8. Elevate extremity at least 8 – 10 inches.
9. Reassess pulse, movement, and sensation (PMS) distal to the injury and record.

**PNEUMATIC ANTI-SHOCK GARMENT
(PASG)
AS AIR SPLINT**

GOAL

To properly apply the PASG for splinting of pelvic and lower extremity fractures

OBJECTIVE

Given a simulated patient, the EMT student will be able to properly apply the PASG within 5 minutes.

EQUIPMENT

Body substance isolation
PASG
Blood pressure cuff
Stethoscope

INDICATIONS

Isolated fractures of legs without evidence of other internal injuries
May be used for pelvic instability

CONTRAINDICATIONS

Internal injuries
Bleeding that cannot be controlled

MODIFIED APPLICATION:

Do not inflate abdominal compartment in the following patients:

1. pregnancy.
2. those with impaled objects in the abdomen or over impaled object.
3. those with abdominal eviscerations.
4. with impaled object in leg.

PRECAUTIONS:

Penetrating thoracic trauma
Abdominal Aortic Aneurysm (AAA)
Closed head injuries

PROCEDURE:

1. Gather and check equipment.
2. Take body substance isolation precautions.
3. Assess blood pressure and pulse, movement, and sensation (PMS) in lower extremities. Record the findings.
4. Remove patient's clothing or any objects from pockets that might puncture

the PASG or cause pressure points. Assess areas. (In simulation ONLY, verbalize “sweep the pockets”)

5. Unfold the garment with the inflation hoses toward the underneath side onto long spine board.
6. Place patient on the garment by using method appropriate for injury:
 - a. Use scoop stretcher to place patient on unfolded garment.
 - b. Gently lift the lower extremities, slide the unfolded garment under the patient from the feet until the top edge of the garment lies just below rib cage.
7. Enclose left leg, right leg and then abdomen attaching Velcro fasteners on each compartment.
8. Attach all tubes from each compartment to the foot pump and open all stopcocks.
9. Inflate garment until the wrinkles are out of the splint and thumb pressure on the inflated suit allows slight contact with the leg. Close all stop cocks.
10. Re-assess blood pressure to ensure it does not increase more than 10 mmHg Systolic.
11. Leave foot pump attached and place between patient's legs.
12. Re-assess pulse, movement, and sensation (PMS) distal to the injury and record.

GENERAL CONSIDERATIONS

Local protocols may determine the use of PASG.

Use the proper size PASG on pediatric patients.

PASG alone will not serve as a traction device.

PASG used in hot/cold environment and altitudes may need adjustments.

PASG General Considerations – *continued*

Use with traction splints:

Apply the traction splint first, applying traction and securing leg straps. Then apply the trousers over the traction splint. Inflate the trousers in the appropriate sequence.

Clean the PASG device with mild soap and water and air-dry.

DO NOT USE BLEACH.

DO NOT PLACE IN DIRECT SUNLIGHT.

BOARD IMMOBILIZATION

RADIUS / ULNA

GOAL

To provide immobilization of an injured forearm

OBJECTIVE

Given a simulated patient, the EMT student will be able to apply a board splint to the forearm in 10 minutes.

EQUIPMENT

Body substance isolation
One fifteen inch padded board
Two triangular bandages or more
Two rolls of roller gauze

PROCEDURE

1. Gather necessary equipment.
2. Take body substance isolation precautions.
3. Expose injury site.
4. Remove any jewelry.
5. Assess pulse, movement, and sensation (PMS) distal to the injury and record.
6. With minimum movement, position the padded part of the board next to the anterior side of the forearm.
7. Place hand in position of function inserting adequate padding in the palm to maintain position.
8. Adjust board to extend slightly distal to the fingertips.
9. Using the roller bandage, secure arm to board.
 - a. Anchor at the wrist.
 - b. Secure hand to board between two fingers and over end of board.
 - c. Secure forearm, distal to proximal.
 - d. Leave the fracture site exposed.
 - e. Leave access for radial pulse check.
10. Reassess pulse, movement, and sensation (PMS) distal to the injury and record.
11. Apply sling and swathe and elevate forearm to 60 degrees.
12. Reassess pulse, movement, and sensation (PMS) distal to the injury and record.

BOARD IMMOBILIZATION

TIBIA / FIBULA**GOAL**

To provide immobilization to a possible fracture

OBJECTIVE

Given a simulated patient, the EMT student will be able to immobilize a possible fractured lower extremity, utilizing padded boards, within 10 minutes.

EQUIPMENT

Body substance isolation
Two 36" padded boards
Four to Six triangular bandages
Padding

PROCEDURE

1. Gather equipment.
2. Take body substance isolation precautions.
3. Expose injured site and assess pulse, movement, and sensation (PMS) distal to the injury and record.
4. Using natural void areas place cravats under injured extremity.
 - a. Two cravats above the knee
 - b. Two cravats below the knee.
 - i. Avoid the knee.
 - ii. Place above the maleoli.
 - iii. Place at least one cravat above and at least one cravat below fracture site. (some patients/injuries may require two above and two below)
5. Place a padded board on both sides of injured extremity.
 - a. Padded side of splint placed against the injured extremity.
 - b. Distal ends of boards should be approximately equal and distal of the foot.
 - c. Pad the void areas and the groin.
6. Secure boards with cravats.
 - a. Distal to proximal.
 - b. Knots tied to lateral side of injured extremity over board.
7. Reassess pulse, movement, and sensation (PMS) distal to the injury and record.
8. Elevate the extremity at least 8 – 10 inches.
9. Reassess pulse, movement, and sensation (PMS) distal to the injury and record.
10. Legs should be tied together to prevent movement.
 - a. Gently move uninjured leg to injured leg, placing a pillow or rolled blanket between the legs.

- b. Secure with remaining cravats:
 - i One below the knee.
 - ii One above the knee.
- 11. Assess pulse, movement, and sensation (PMS) distal to the injury and record.

BOARD IMMOBILIZATION HIP

GOAL

To provide immobilization to an injured hip

OBJECTIVE

Given a simulated patient, the EMT student will be able to immobilize the injured hip using board splints within 5 minutes.

EQUIPMENT

Body substance isolation
One 54" padded board
One 36" padded board
Eight triangular bandages
Padding
Pillow or blanket

PROCEDURE

1. Gather equipment.
2. Take body substance isolation precautions.
3. Expose the injury site and distal extremity.
4. Assess pulse, movement, and sensation (PMS) distal to the injury and record.
5. Using the natural void areas apply three cravats below the knee, three cravats above the knee. Apply two cravats above the waist. Do not restrict breathing and do not cover the knee.
6. Place the 54" padded board in the axillary region
 - a. Pad the proximal end.
 - b. Board must extend past the knee.
 - c. Padded side must be against the patient.
 - d. Pad void areas.
7. Place the 36" padded board, in the groin area.
 - a. Pad the proximal end.
 - b. Board must extend past the knee.
 - c. Padded side must be against the patient's affected limb.
 - d. Pad void areas.
8. Secure the boards distal to proximal using:
 - a. Two cravats below the knee and above the malleoli.
 - b. Two cravats above the knee.
 - c. Two cravats above the waist without restricting breathing.
9. Reassess pulse, movement, and sensation (PMS) distal to the injury and

record.

10. Place pillow or rolled blanket between the legs and secure with remaining cravats:
 - a. One below the knee.
 - b. One above the knee.
11. Assess pulse, movement, and sensation (PMS) distal to the injury and record.

SAGER TRACTION SPLINT

GOAL

To provide for a single rescuer rapid immobilization to the middle one third of the injured femur

OBJECTIVE

Given a simulated patient, the EMT student will be able to immobilize an injured femur within 5 minutes.

EQUIPMENT

Body substance isolation
Sager device with accessories
Padding

PROCEDURE

1. Gather and check equipment.
2. Take body substance isolation precautions.
3. Assess pulse, movement, and sensation (PMS) distal to the injury and record.
4. Seat the Ischial Perineal Cushion against the ischial tuberosity, with the shortest end of the articulating base towards the ground. Pad well. The pulley wheel should be on the same side and towards the injured extremity.
5. Apply the Abductor Bridle (thigh strap) snugly around the upper thigh of the fractured extremity.
6. Push the Ischial Perineal Cushion gently down while at the same time pulling the Abductor Bridle (thigh strap) laterally under the patient's thigh. This will seat the lower end of the cushion comfortably against the ischial tuberosity.
7. Tighten the Abductor Bridle snugly, lift the spring clip to extend the inner shaft until the pulley wheel is immediately distal to the patient's heels.
8. Position and apply the Malleolar Harness (ankle sling) snugly just above the ankle.
9. Adjust Malleolar Harness (ankle sling) against sole of foot then attach to pulley.
10. Extend shaft to amount of traction desired. 10% of body weight not to exceed 15 lbs. (7 kg)
11. Re-check Abductor Bridle (thigh strap).
12. Using natural void areas, place the elasticized cravats as follows:

- a. One above the knee.
 - b. One at knee.
 - c. One below the knee at ankle.
- 13. Secure the elasticized cravats proximal to distal.
- 14. Pad between the legs. Tie legs together at the ankles bringing the uninjured leg in a smooth motion to the injured leg. Hold feet together with your knees if necessary then secure straps.
- 15. Re-assess pulley traction, pulse, movement, and sensation (PMS) distal to the injury and record.
- 16. Elevate extremities at least 8 – 10 inches.
- 17. Reassess pulley traction, pulse, movement, and sensation (PMS) distal to the injury and record.
- 18. Transfer and secure torso to longboard.
- 19. Secure splint to LSB to prevent movement of splint.
- 20. Reassess circulatory movement and sensation distal to injury and record.

GENERAL CONSIDERATIONS

Contraindicated in open fractures, injuries to the groin area, pelvis fractures from knee distally to ankle, injuries close to knee, injury to the knee, injury to the hip and injury to the pelvis. If partial amputation or avulsion with bone separation, the distal limb is connected only by marginal tissue; thus traction could cause a complete separation.

USE WITH PASG DEVICE

Apply the traction splint first, applying traction and securing leg straps. Then apply the trousers over the traction splint. Inflate the trousers in the appropriate sequence.

TRACTION SPLINT

GOAL

To provide stabilization and immobilization to the middle one third of the femur

OBJECTIVE

Given a simulated patient, the EMT student will be able to apply a traction splint to an injured femur within 10 minutes.

EQUIPMENT

Body substance isolation
1/2 ring traction splint or mechanical traction (ratchet) device
Four cradle devices (commercial or cravats)
Ankle hitch (commercial or cravat)
Ratchet device or windlass
Padding
Heel Stand

INDICATIONS:

Painful, swollen, deformed mid-thigh with no joint or lower leg injury

CONTRAINDICATIONS:

Injury to the knee or within one or two inches of the knee
Injury to the hip
Injury to the pelvis
Partial amputation or avulsion with bone separation, distal limb is connected only by marginal tissue
Lower leg or ankle injury

PROCEDURE:

1. Gather and check equipment.
2. Take body substance isolation precautions.
3. Expose the injury site and distal extremity.
4. Assess pulse, movement, and sensation (PMS) distal to the injury and record.
5. Using the natural void areas:
 - a. apply the ankle hitch with minimal movement.
 - b. assure that the ankle hitch is properly padded and placed high on the ankle, superior to malleoli.
6. Apply in-line continuous manual traction to leg:
 - a. elevate 12 inches maximum.
 - b. elevate 8 – 10 inches minimum.
7. Draw manual traction until one of the following:

- a. Leg approximates normal length.
 - b. Pain relieved.
 - c. Pain unduly increases.
 - d. Thigh muscles relax.
8. Prepare/adjust splint to proper length. Cover ischial ring on medial side with adequate padding prior to seating in groin.
 - a. ensure splint is seated in groin.
 - b. ensure the ischial pad (ring) is positioned at the proper angle.
9. Properly secure the ischial strap over the thigh, padding as necessary.
10. Secure ankle hitch to end of splint and draw mechanical traction.
 - a. Elevate with heel stand or other device.
 - b. Manual traction **may** be released, but the injured extremity **must** be held stable while cradle devices are secured.
11. Apply cradle devices:
 - a. Distal to proximal.
 - b. Apply two cradles below the knee and two cradles above the knee.
 1. One above and one below the fracture site.
 2. Do not place cradle hitch on fracture site or the knee.
 3. Pad if necessary.
 - c. The bone should be in line with the splint bars.
12. Re-assess each cradle device for tightness and bone alignment and record.
13. Re-assess mechanical traction.
 - a. If using a Thomas ½ Ring, secure windless with a cravat or tape. Use a cravat and tape for any device as necessary.
14. Re-assess pulse, movement, and sensation (PMS) distal to the injury and record.
15. Release manual traction (if not released in step #10).
16. Reassess circulation, movement, & sensation distal to injury and record.
17. Transfer and secure torso to longboard to immobilize the hip.
18. Secure splint to LSB to prevent movement of splint.
19. Re-assess pulse, movement, and sensation (PMS) distal to the injury and record.

GENERAL CONSIDERATION

During immobilization of an open femur, avoid pulling the bone ends back onto the skin. Stop traction when the bone ends begin to move.

USE WITH PASG DEVICE:

Apply the traction splint first, applying traction and securing leg straps. Then apply the trousers over the traction splint. Inflate the trousers in the appropriate sequence.

JOINT INJURY SPLINT

GOAL

To properly apply a splint to a joint injury

OBJECTIVE

Given a simulated patient, the EMT student will be able to properly apply a splint to a joint injury within 5 minutes.

EQUIPMENT

Body substance isolation
Triangular bandages appropriate for the injury
Board splints appropriate for the injury

PROCEDURE

1. Gather and check equipment.
2. Take body substance isolation.
3. Apply manual stabilization
4. Assess pulse, movement, and sensation (PMS) distal to the injury and record.
 - a. if distal extremity is cyanotic or lacks pulses and no resistance is met then make one attempt to align with gentle traction.
 - b. if alignment is unsuccessful, then splint in place and transport immediately
 - c. contact medical control.
 - d. document findings and actions.
5. Immobilize the site of injury.
6. Immobilize the bone above and below the site of injury.
7. Re-assess pulse, movement, and sensation (PMS) distal to the injury and record.

SHOCK

**PNEUMATIC ANTI-SHOCK GARMENT
(PASG)
For Shock (Hypovolemia)**

GOAL

To properly apply the PASG in order to control bleeding, treat traumatic hypotension and distributive shock (neurogenic and anaphylactic)

OBJECTIVE

Given a simulated patient, the EMT student will be able to properly apply the PASG within 5 minutes.

EQUIPMENT

Body substance isolation
PASG

Blood pressure cuff
Stethoscope

INDICATIONS

Hypoperfusion secondary to external hemorrhage that can be controlled
Spinal Shock without evidence of other internal injuries
Blood pressure of 50 mmHg Systolic or less obtained by mechanical means, OR
systolic blood pressure unobtainable by auscultation or palpation
Anaphylactic shock

CONTRAINDICATION

Absolute:
Pulmonary edema
Bleeding that cannot be controlled

MODIFIED APPLICATION

Do not inflate abdominal compartment in the following patients:

1. pregnancy.
2. those with impaled objects in the abdomen or over impaled object.
3. those with abdominal eviscerations.
4. with impaled object in leg.

PRECAUTIONS

Penetrating thoracic trauma
Abdominal Aortic Aneurysm (AAA)
Closed head injuries

PROCEDURE

1. Gather and check equipment and take body substance isolation precautions.

2. Assess pulse, movement, and sensation (PMS) distal to the injury and record.
3. Evaluate the patient through at least the initial assessment. Assess vital signs and record.
4. Remove patient's clothing or any objects from pockets that might puncture the PASG or cause pressure points (SWEEP).
5. Unfold garment and lay it flat with the inflation hoses toward the underneath side onto a long board.
6. Place patient on the garment by: [in order of preference]
 - a. Use scoop stretcher to place patient on unfolded garment.
 - b. Log roll the patient and slide garment under the patient so that the spine line is in proper position, with the top edge of garment just beneath the rib cage. Log roll the patient onto the garment.
 - c. Gently lift the lower extremities, slide the unfolded garment under the patient from the feet until the top edge of the garment lies just below rib cage.
7. Assess distal pulse, movement, and sensation (PMS) and record.
8. Enclose left leg, right leg, and abdomen by attaching Velcro fasteners on each compartment.
9. Attach all tubes from each compartment to the foot pump and open all stopcocks.
10. Inflate garment slowly using the foot pump. Monitor patient's blood pressure. Inflate until one of the following occurs:
 - a. systolic pressure reaches 80 – 90 mm/Hg.
 - b. the relief valves release pressure.
 - c. the velcro begins to crackle.

INFLATION PROCEDURE

11. Inflate the garment slowly while monitoring the blood pressure.
12. When the patient's blood pressure reaches 80 - 90 mmHg:
 - a. Close all stop cocks.
 - b. Tape valves closed.
13. Leave foot pump attached and place between patient's legs.
14. Reassess pulse, movement, sensation (PMS) and record.
15. Monitor and record all vital signs every 5 minutes and add pressure to the trousers as needed.

GENERAL CONSIDERATIONS

Local protocols may determine the use of PASG.

Evaluate patient's chance of survival without the suit.

The pressure inside the suit is not being monitored.

Use the proper size PASG on pediatric patients.

PASG is the preferred treatment for pelvic instability.

When used with traction splints:

Apply the traction splint first, applying traction and securing leg straps. Then apply the trousers over the traction splint. Inflate the trousers in the appropriate sequence.

Clean the PASG device with mild soap and water and air-dry.

DO NOT USE BLEACH and DO NOT PLACE IN DIRECT SUNLIGHT.

Removal Procedure

1. PASG should never be removed in the field unless under the direct order of a physician.
 - a. Should occur in a hospital setting.
 - b. Should have at least two large bore IV 's of Ringer's Lactate, Normal Saline, or blood.
 - i Infuse a minimum of 3 cc's per 1 cc blood loss.
 - c. Obtain and closely monitor vital signs.
2. Begin slow deflation of abdomen.
 - a. Carefully monitor vital signs. Blood pressure, especially, is to be continuously monitored.
 - i If BP falls 6 mm Hg Systolic or more, stop and infuse more fluid or blood until the vital signs stabilize again (this usually requires at least 200 cc)
 - b. Each compartment should take at least 15 minutes per section to deflate.
3. Proceed from the abdominal compartment to the right leg and then the left leg, continuously monitoring the blood pressure and stopping to infuse fluid when a drop or 6 mm Hg Systolic occurs.
4. If the patient experiences a sudden precipitous drop in blood pressure while deflating, stop and re-inflate the garment.

DEFINITIONS OF TERMS

Adrenaline - also known as epinephrine; used in the treatment of anaphylactic shock.

Allergy - an altered reaction to body tissues to a specific substance (allergen) which in normal persons will cause no problems.

Allergen – a substance that enters the body by ingestion, injection, inhalation, or contact and triggers an allergic reaction.

Allergic Reaction – a misdirected and excessive response by the immune system to a foreign substance or an allergen.

Anaphylaxis – a severe allergic reaction that produces respiratory distress and shock (hypoperfusion).

Anaphylactic Shock – a hypoperfusion state that results from dilated and leaking blood vessels related to severe allergic reaction. The patient also experiences respiratory distress and hives. It is also called anaphylaxis or anaphylactic reaction.

Antibodies – special proteins produced by the immune system that search out antigens, combine with, and help to destroy them.

Antigen – a foreign substance that enters the body and triggers an immune response.

Antihistamine - an agent which is used in the treatment of allergies because it counteracts the effects of histamine.

Epinephrine - also known as Adrenaline, used in the treatment of anaphylactic shock.

Histamine - a substance in the body found wherever tissues are damaged.

Hives – raised, red blotches associated with some allergic reactions.

Intramuscular Injection – used to deliver certain medications deep into the patient's muscle fiber.

Subcutaneous layer – a layer of fatty tissue just below the dermis.

Urticaria – name given to the raised areas that occur on the skin associated with vasodilation due to histamine release. Commonly referred to as “hives”.

Wheal - a sudden elevation of the skin, usually white in the center and pale red around it; a welt accompanied by itching.

Wheezing - a whistling sound or sighing sounds heard on inhalation and exhalation and when having difficulty in breathing.

**MATH CALCULATION
EPINEPHRINE 1:1,000****GOAL**

To enable the student to calculate the appropriate dose of epinephrine 1:1,000

OBJECTIVE

Given a simulated patient, the EMT student will be able to calculate the appropriate drug dosage in 1 minute.

EQUIPMENT

Pencil
Paper
Calculator (optional)

PROCEDURE:

1. Dosage administration is based on patient's weight in kilograms.
2. Calculate weight in kilograms. Divide the patient's weight by 2.2 to convert or calculate the patient's weight in kilograms. 1 kilogram is equal to 2.2 pounds. (2.2 lbs = 1 kilogram)
 - a. Example: Patient weighs 66 lbs.

66 divided by 2.2 = 30 kilograms
2. Dosage formula for amount administered in milliliters (ml) is 0.01 mg multiplied by the patient's weight in kilograms:
 - a. $0.01 \times \text{patient's weight in kilograms} = \underline{\hspace{2cm}} \text{ ml}$
 - b. $0.01 \text{ mg} \times 30 \text{ kg} = 0.3 \text{ ml}$

GENERAL CONSIDERATION

The maximum adult dose of epinephrine is 0.3 ml per injection.

The dosage may be repeated in 5 - 20 minutes with medical orders.

SUBCUTANEOUS INJECTION

GOAL

To properly prepare and administer a subcutaneous injection

OBJECTIVE

Given a simulated patient, the EMT student will be able to administer a subcutaneous injection within 5 minutes.

EQUIPMENT

Body substance isolation
TB syringe
23/25 gauge 5/8" needle
Medication
Alcohol preps
Band-Aid

PROCEDURE (MEDICATION)

1. Apply high flow oxygen with nonrebreather facemask.
2. Gather and check equipment.
3. Calculate desired medication.
4. Obtain orders unless standing orders exist.
5. Take body substance isolation precautions.
6. Check medication for:
 - a. correct drug (concentration or dilution).
 - b. clarity of drug.
 - c. expiration date.
7. Explain procedure to patient.
8. Explain possible side effects to the patient.
9. Select site:
 - a. Upper outer arm.
 - b. Anterior thigh.
 - c. Abdomen.
 - d. Subscapular portion of back.

PREPARE INJECTION SITE

10. Cleanse site with alcohol prep in a circular motion from center to outer area, at least 2 inches from center. Allow to air dry.

11. While allowing site to air dry, cleanse top of multidose vial with alcohol prep, **OR** Wrap top of ampule with alcohol prep and break off.
12. Remove cap of needle and withdraw amount of medication needed from ampule or vial.
13. Remove (evacuate) excess air from syringe.

GIVE INJECTION

14. Pinch fatty subcutaneous pad between index finger and thumb.
15. With bevel of needle up, and using a darting motion, insert needle at a 45 to 90 degree angle.
16. Release fatty subcutaneous pad and slightly aspirate while holding syringe with one hand:
 - a. if blood appears in syringe, stop the injection, withdraw the needle, prepare another injection with new equipment, and inject another site.
 - b. if syringe is clear, continue to step # 17.
17. Inject medication slowly.
18. Remove needle and gently massage area with alcohol prep.
19. Do not recap needle after injection.
20. Dispose of contaminated needle and syringe in sharps container.
21. Cover injection site with band-aid.

DOCUMENT - On Each Injection

Patient's Name	Medication
Amount of Medication	Route
Site	Date
Time	Patient's response

GENERAL CONSIDERATIONS

The risk of the following exists when giving an injection:

- Giving wrong medication.
- Giving wrong dosage.
- Sticking yourself and others with contaminated needle.
- Reaction to medication.

Always make sure of the five 'rights'.

Right Patient	Right Medication
Right Dosage	Right Route
Right Time	

SIDE EFFECTS OF EPINEPHRINE 1:1,000

Increase in heart rate
Increase in blood pressure
Anxiety
Palpitations
Headache

INTRAMUSCULAR INJECTION

GOAL

To properly prepare and administer an intramuscular injection

OBJECTIVE

Given a simulated patient, the EMT student will be able to administer a intramuscular injection within 10 minutes.

EQUIPMENT

Body substance isolation
20 – 25 gauge 1" to 3" length needle
Medication

Alcohol pads
Band-Aid

PROCEDURE (MEDICATION)

1. Apply high flow oxygen with nonrebreather facemask.
2. Gather and check equipment.
3. Calculate medication to be given.
4. Obtain orders unless standing orders exist.
5. Take body substance isolation precautions and ensure sterile technique.
6. Check label on the medication bottle and the medication for:
 - a. correct drug (concentration or dilution).
 - b. any discoloration (clarity) of drug.
 - c. expiration date.
7. Draw up the medication into the syringe. During this time, explain both the procedure and the possible side effects to patient.

SELECT THE INJECTION SITE

8. Carefully select site so major blood vessels and nerves are avoided:
 - a. Deltoid (Arm). A maximum of 1.0 cc may be administered here.
9. Use different sites to prevent repeated injections in the same area and change sites with each injection.
10. Do not use areas that are tender, scarred, swollen, or bruised.

PREPARE INJECTION SITE

11. Gently tap the injection site to stimulate the nerve endings and minimize pain when the needle is inserted then cleanse site with alcohol prep in a circular motion to a circumference of about 2" from center (injection site) to outer area. Allow to air dry.

12. While allowing site to air dry, cleanse top of multidose vial with alcohol prep, **OR** wrap top of ampule with alcohol prep and break off.
13. Remove cap of needle and withdraw amount of medication needed from ampule or vial.
14. Remove excess air from syringe.
15. **Deltoid (Arm) Site for IM Injection**
 - a. Draw an imaginary “box” on the patient’s upper arm.
 - b. The top boundary is two fingerbreadths below the Acromion Process. The lower boundary is a point in line with the patient’s axilla or an imaginary line running from the crease of the armpit, front to back.
 - c. To determine the lateral or side borders, divide the arm into three equal sections, from dorsal to ventral. The desired site for the Deltoid Injection is in the center of the middle third.
 - d. Using the desired Deltoid Injection site, stretch the skin tightly with one hand so that the injection site is (approximately) in the center of your fingers.
 - e. Hold the syringe with your dominant hand like a pencil or dart, remove the needle sheath by slipping it between the free fingers of your nondominant hand and draw back the syringe.
 - f. Position the syringe at a 90-degree to the skin surface, with the needle a couple of inches from the site. Warn patient of the nearing prick as you insert the needle with the bevel of the needle up and a darting motion. Then quickly and firmly thrust the needle through the skin and subcutaneous tissue, into the muscle.
 - g. Support the syringe with your nondominant hand. Pull back slightly on the plunger with your dominant hand to aspirate for blood:
 1. if blood appears in syringe, stop the injection, withdraw the needle, prepare another injection with new equipment, and inject another site.
 2. if syringe is clear, continue to step # 17.
16. Release the skin and inject medication slowly. Hold onto the syringe to prevent it from moving. A slow, steady injection rate allows the muscle to distend gradually and accept the medication under minimal pressure.
17. After the injection, gently but quickly remove the needle at a 90-degree angle.
18. Immediately cover the injection site with an alcohol pad and apply gentle pressure or gently massage. This may help distribute the drug.
19. Do not recap needle after injection. Dispose of contaminated needle,

syringe, and all other materials according to standard precautions and the EMT's employer's policies.

20. Ensure bleeding has stopped and cover injection site with band-aid.
 - a. If bleeding continues, re-apply pressure and reevaluate after 5 – 10 minutes. Repeat this step as necessary.
 - b. If bruising occurs, an ice pack may be applied.
 - c. An older patient may experience additional bleeding due to the decreased tissue elasticity.
21. Reassess the patient. Observe for adverse reactions at the site for at least 10 – 30 minutes after injection.
22. Document and record the process.

DOCUMENT - On Each Injection

Patient's Name	Medication
Amount of Medication	Route
Site	Date
Time	Patient's response

GENERAL CONSIDERATIONS

The risk of the following exists when giving an injection:

- Giving wrong medication.
- Giving wrong dosage.
- Sticking yourself and others with contaminated needle.
- Reaction to medication.

Always make sure of the five 'rights'.

Right Patient	Right Medication
Right Dosage	Right Route
Right Time	

SPECIAL CONSIDERATIONS

Older patients have less muscle mass. Therefore, I.M. medications can be absorbed faster than expected.

Always encourage the patient to relax the intended muscle. Injections into tense muscles are more painful than usual and may bleed more readily.

Never inject into sensitive muscles, especially those that twitch or tremble when assessing landmarks and tissue depth. Injections into these areas may cause sharp and intense pain.

AUTO-INJECTOR

GOAL

To administer epinephrine by using an auto-injector

OBJECTIVE

Given a simulated patient who is showing signs of an anaphylactic reaction and has an auto - injector, the EMT student will be able to administer the epinephrine injection in an appropriate injection site following the directions of the manufacturer in less than one minute.

EQUIPMENT

Auto-injector: Directions are clearly defined on pen.

PROCEDURE:

1. Take body substance isolation precautions.
2. Obtain order from medical direction.
3. Obtain patient's prescribed auto-injector. Ensure the prescription is written for the patient experiencing allergic reactions.
4. Remove injector from box and check medication for:
 - a. expiration date.
 - b. cloudiness or discoloration.
5. Remove safety cap from end of injector as indicated on side of injector.
6. Select appropriate injection site:
 - a. lateral portion of the thigh.
 - b. midway between the waist and the knee.
7. Check injector to see if it is loaded.
8. Place the tip firmly against site as indicated on side of pen.
9. Push hard until you hear or feel injector activate.
10. Hold injector in place until the medication is injected or for a minimum of ten (10) seconds.
11. Record activity and time.
12. Properly discard injector in biohazard container.

General Consideration

Auto - injectors are packaged in adult and children dosages.

Adult Dosage:	0.3 mg in single dose
Infant and Child Dosage:	0.15 mg in single dose

PACKAGING

CLAM SHELL SPINAL IMMOBILIZATION DEVICE

GOAL

To provide a means of spinal immobilization for a patient in a sitting position during extrication

OBJECTIVE

Given a simulated patient, the EMT student will be able to properly apply the clam shell immobilization device within 10 minutes.

EQUIPMENT

Body substance isolation
Approved clamshell device
Accessory equipment
Cervical collar adaptable to device
Padding
Triangular Bandages

PROCEDURE:

1. Gather equipment and take body substance isolation precautions.
2. Direct or maintain manual immobilization of the head and neck.
3. Assess pulse, movement and sensation (PMS) of all extremities and record.
 - a. Assess head and neck.
 - b. Assess for tracheal deviation and JVD or any other abnormalities of the neck prior to moving to step # 4.
4. Apply a cervical collar and reassess airway after application.
5. Insert device between arms of partner (top portion first) and between the patient's back and the seat.
6. Seat device in patient's axilla.
7. Connect middle torso strap and tighten using a smooth pulling motion.
8. Connect bottom torso strap and tighten.
9. Connect groin straps by: (Make sure groin is well padded)
 - a. Passing straps laterally to medially underneath leg.
 - b. Remove slack by pulling the straps up through groin.
 - c. Passing strap laterally and connect to the same side.
10. Pull shoulder straps down over the chest.
11. Connect and tighten the top torso strap over the shoulder straps.

12. Re-assess breathing after tightening torso straps and record.
13. Connect shoulder straps.
14. Secure feet, knees and hands with cravats or device straps.
15. Secure head to board:
 - a. Attach appropriate straps to cervical collar.
 - b. Apply forehead straps downward at a 20-degree angle.
 1. Bring the board to the patient's head. Do not bring patient's head to the board.
 2. Avoid extending or flexing the neck.
16. Re-assess all straps and connections and record.
17. Re-assess pulse, movement and sensation (PMS) of all extremities and record.
19. Re-assess airway and record.
20. Release manual immobilization.

GENERAL CONSIDERATIONS:

This device does not effectively complete the spinal immobilization process.

Move and secure the patient to long spine board to provide adequate spinal immobilization.

Release the groin straps immediately upon moving patient to long spine board. Keep the patient's knees bent upward, perpendicular to the long board until groin straps are released. Ensure straps have sufficient "slack" so as to not cause injury to the groin area.

Perform rapid extrication methods instead of using this device if at anytime:

1. There is an immediate danger to the patient (fire, explosion, etc.).
2. The initial assessment indicates a condition (profound shock) that requires immediate intervention that cannot be accomplished in the vehicle.

HELMET REMOVAL

GOAL

To appropriately remove a helmet on a possible cervical injured patient

OBJECTIVE

Given a simulated patient, the EMT student will be able to appropriately remove a helmet on a possible cervical injured patient within 5 minutes.

EQUIPMENT

Body substance isolation
Vital sign equipment
Cervical immobilization equipment

INDICATIONS FOR REMOVAL

Inability to assess and / or reassess airway and breathing
Restriction of adequate management of the airway or breathing
Improperly fitted helmet allowing for excessive patient head movement within the helmet.
Proper spinal immobilization cannot be performed due to helmet.
Cardiac arrest

INDICATIONS FOR LEAVING HELMET IN PLACE

Good fit with little or no movement of the patient's head within the helmet.
No impending airway or breathing problem.
Removal would cause further injury to the patient.
Proper spinal immobilization could be performed with helmet in place.
No interference with the EMT-Basic's ability to assess and reassess airway and breathing.

GENERAL RULES FOR REMOVAL

1. Body substance isolation.
2. Provide manual immobilization of cervical spine.
3. Ensure careful evaluation of indications and contraindications of removal and record.
4. Remove patient's eyeglasses (if applicable) before removal of the helmet.
5. One EMT-B stabilizes the helmet by placing his hands on each side of the helmet with the fingers on the mandible to prevent movement.
6. Second EMT loosens the strap.
7. The second EMT places one hand on the mandible at the angle of the jaw and the other hand posteriorly at the occipital region.

8. The EMT holding the helmet pulls the sides of the helmet apart and gently slips the helmet halfway off the patient's head in a seesaw motion and then stops.
9. The EMT maintaining stabilization of the neck repositions, slides the posterior hand superiorly to secure the head from falling back after complete helmet removal.
10. The helmet is removed completely.
11. The EMT then can proceed with spinal immobilization as indicated in the spinal immobilization section.

GENERAL CONSIDERATION

The technique for helmet removal depends on the actual type of helmet worn by the patient. Refer to the text and or Medical Control for specific approaches to the removal of different types of helmets.

LONG SPINE BOARD

GOAL

To provide stabilization and immobilization to the head, neck, and torso and provide a means for lifting and moving patients

OBJECTIVE

Given a simulated patient, the EMT student will be able to immobilize a patient on the long spine board within 10 minutes.

EQUIPMENT

Body substance isolation
Long Spine Board
Rigid Cervical Collar
3- Straps - (9' in length) others acceptable
Cravats
Cervical Immobilization Device (commercial or towel/blanket rolls to be utilized with tape or cravats)
Padding

PROCEDURE:

1. Gather equipment and take body substance isolation precautions.
2. Direct or apply manual stabilization of the cervical spine in a neutral position. Place little finger along each side of the mandible and use the remaining fingers and thumbs to stabilize the head.
3. Assess pulse, motor and sensation (PMS) of all extremities and record.
4. Properly size and apply cervical immobilization device.
 - a. Prior to applying cervical collar, assess the head and cervical area for abnormalities such as JVD or tracheal deviation.
 - b. In infants and children, if the cervical immobilization device does not fit, use a rolled towel and tape to the board and manually support head.
 - c. An improperly fit immobilization device will do more harm than good.
 - d. Re-assess the airway.
5. Position the device and place patient on long spine board. Utilizing one of the following methods: The method used must be decided based upon the situation, scene and available resources. Movement should be limited to the minimum amount possible.
 - a. Scoop stretcher.
 - b. Four man log roll
 - i. one EMT must maintain in-line immobilization
 - ii. EMT at the head directs the movement of the patient.

- iii. one to three other EMT's control movement of the rest of the body.
 - iv. quickly assess posterior body while pt is in the upward position if not already done in initial assessment.
 - v. position the long spine board under the patient.
 - vi. roll patient onto the board at the command of the EMT holding in-line immobilization.
 - c. Linear drag.
 - d. Standing position - quickly assess posterior body while pt is in the upward position.
6. Center patient on the board without using lateral movements. Position patient on board using the 'Z' method.
 7. Pad all void areas and pressure points between the patient and the board.
 - a. Adult
 - i. Under the head.
 - ii. Voids under torso. Be careful of extra movement.
 - b. Infant and Child – pad under the shoulders to the toes to establish a neutral position
 8. Immobilize patient's torso to long spine board by placing at least three straps distal to proximal.
 - a. Place one between the knee and ankle. Do not cover the knee or ankle.
 - b. Place one at hip region. Do not restrict breathing or circulation.
 - c. Place one between the manubrium and the umbilicus. Do not restrict breathing or circulation. Do not place strap over the xiphoid process. Do not place over the arms.
 - d. Criss crossing the chest is acceptable. A fourth strap is required if using the criss cross method.
 - e. Re-assess breathing and circulation.
 9. Immobilize patient's head to the board.
 - a. Commercial cervical immobilization device (CID).
 - b. Towel/blanket rolls securing across the forehead and the second across the chin portion of the cervical collar. DO NOT place strap UNDER the chin.
 10. Manual immobilization of the patient's head may be released after the patient's head has been secured to the board. Certain situations may require extending the time of manual immobilization.
 11. Secure the patient's ankles and wrists with cravats.
 12. Re-assess ABC's along with pulse, motor, and sensation (PMS) and record.
 13. Recheck all straps and cravats for security and record.

GENERAL CONSIDERATIONS

When neutral position of the head cannot be attained safely, immobilize the head as found.

If board is too short for the patient, always center the head, neck, and spine on the board properly. The feet and lower legs may extend past the end of the board if necessary.

If chinstrap is used, ensure the patient can open their mouth to prevent aspiration should vomiting occur. Accomplish this may by placing chinstrap over chin.

SCOOP STRETCHER

GOAL

To provide an effective means of lifting and moving a supine patient without changing the patient's position

OBJECTIVE

Given a simulated patient, the EMT student will be able to place and secure the supine patient on a scoop stretcher within 10 minutes.

EQUIPMENT

Body substance isolation
Scoop stretcher
3 straps - (9' in length)
4 - 6 Cravats
Padding

PROCEDURE:

1. Gather equipment and take body substance isolation precautions.
2. Adjust scoop stretcher to accommodate height of the patient.
3. Disconnect stretcher at both head and foot ends.
4. Place one section of the stretcher on each side of the patient ensuring that the head and foot connections are located properly. (Do not pass stretcher halves across patient)
5. Gently tilt patient slightly to the side and slide stretcher under the patient until it is properly in place with head connection centered above the patient's head.
6. Repeat step 5 for the opposite side.
7. Secure head connection first, then the foot connection, being careful not to pinch the patient's back or buttocks.
8. Secure patient's trunk to scoop stretcher by placing at least three straps distal to proximal.
 - a. Place one between knee and ankle. Avoid over the knee or ankle.
 - b. Place one at hip region. Do not restrict breathing.
 - c. Place one across the chest. Be sure this strap is not over the arms and does not restrict breathing.
9. Pad the patient appropriately.
10. Secure ankles and wrists with cravats, assess PMS and record.
11. Secure head (as needed) for spinal precautions.

12. Reassess and recheck all connections, straps, PMS and record.

GENERAL CONSIDERATIONS

The scoop stretcher is a spinal immobilization device without a long spine board.

Hold and maintain manual immobilization until patient is completely secured to a long spine board if indicated.

Never pass the stretcher over the patient.

The weight capacity of the scoop stretcher is extremely important to the EMT. Therefore, the EMT shall obtain this information about the scoop stretcher being used by the EMT's employer.

EMT PHARMACOLOGY

Activated Charcoal
(SuperChar, InstaChar, Actidose, Liqui-Char)

Description:

The medication of choice in the emergency medical care of ingested poisonings.

Action:

A specially distilled charcoal treated with superheated steam, is extremely porous and therefore can adsorb many times its weight in contaminants. The activated charcoal adsorbs the poison in the stomach, enhances elimination, and inhibits the poison from being absorbed into the body. It does not bind to alcohol, kerosene, gasoline, antifreeze, caustics or metals such as iron.

Indications:

Upon orders from Medical Direction, activated charcoal may be administered to patients who have ingested poisons by mouth.

Contraindications:

Patients without a gag reflex
Patients with an altered mental status
Patients who have ingested acids or alkalis

Precautions:

May cause vomiting
May cause blackened stools
Does not bind to alcohol, kerosene, gasoline, caustics, or metals such as iron

Form:

Pre-mixed bottle contains 12.5 grams of activated charcoal.
The powder form should be avoided in the pre-hospital setting.

Dosage:

Administer 1 gram of activated charcoal per Kg unless otherwise directed by Medical Control.

The usual adult dose is 25 – 50 grams.

The usual pediatric dose is 12.5 – 25 grams.

Route:

Shake container thoroughly.
Have patient drink slurry through a straw.
If the patient vomits, notify medical control to authorize repeating the dose.

Aspirin (ASA)
(Bayer, St. Josephs)

Description:

Thrombolytic

Actions:

Reduces overall mortality from acute myocardial infarction (AMI).
Reduces additional infarct.
Reduces strokes.
Blocks formation of Thromboxane A2 which causes platelets to aggregate and arteries to constrict.

Indications:

Therapy for all patients with new pain suggestive of AMI.

Contraindications:

Patients with acute ulcer disease, GI or other bleeding disorders
Patients experiencing an Asthma attack
If the patient has already had an ASA prior to arrival
Known hypersensitivity of aspirin

Precautions:

Patients with a history of Asthma, verify patient's known tolerance of aspirin.
Doses higher than recommended can interfere with Prostacyclin production and benefits.

Side Effects:

At higher doses the following may occur:
Sweating
Nausea
Fall in Blood Pressure
GI bleeding

Dosage:

160 mg to 325 mg as soon as possible and preferably chewable

Route:

Patients should chew one aspirin and take one by mouth

Bronchodilator - Albuterol
(Proventil, Ventolin, Bronkosol, Alupent, Metaprel, etc)

Description:

A commonly prescribed bronchodilator in pre-hospital care, Albuterol is administered with a small volume nebulizer, or metered dose inhaler.

Action:

Causes bronchodilation with minimal side effects, reduces airway resistance, and duration is approximately five hours.

Indications:

Bronchial asthma or signs and symptoms of respiratory distress.
Reversible bronchospasm associated with chronic bronchitis and cases of emphysema.
Third drug for anaphylaxis.

Contraindications:

Patients with a known hypersensitivity to the drug

Precautions:

Palpitations, anxiety, nausea, and dizziness.
Monitor vital signs.
Use caution when administering to patients with history of cardiovascular disease or hypertension.

Dosage:

Nebulizer: Adult: 2.5 mg of the drug placed in 3 ml of normal saline for inhalation and administer by nebulizer @ 6 LPM, until appropriate mist is achieved or according to the flow rate established in the nebulizer's manufacturer's recommendations.

Metered Dose Inhaler:

Shake inhaler vigorously several times and administer to the patient upon deep inhalation. The patient should hold their breath approximately 10 seconds to assure more effective use of medication.

Route:

Inhalation only

**50 % Dextrose in Water
(D₅₀W)****Description:**

To provide glucose for patients who have low blood glucose levels as determined by blood glucometer. Glucose is the principal energy source utilized by the brain and other tissues.

“Dextrose” is used to describe the six-carbon sugar molecule that is the principal form of carbohydrate for the body.

Action:

Rapid absorption of glucose by the cells in treatment of hypoglycemia.

Indications:

Known Hypoglycemia patient with coma
Symptomatic known Hypoglycemia

Contraindications:

May be detrimental to patients experiencing cerebral ischemia and / or hemorrhage. D₅₀W may increase cranial bleeding.

Precautions:

Localized irritation may occur when using smaller veins, which can cause tissue necrosis.

Ensure patency of IV line prior to administration. Extravasation may occur which will cause tissue necrosis.

Dosage:

25.0 grams (0.5g/mL)

Standard dose of 50% Dextrose in symptomatic hypoglycemia is 25 grams (50 mls of a 50% solution) IV.

If after 5 – 10 minutes and the first dose is ineffective, a second dose of 25 grams may be administered.

Route:

IV only

DO NOT ATTEMPT TO “MAINLINE” -- D₅₀W is very, very necrotic.

25 % Dextrose in Water (D₂₅W)

Description:

To provide glucose for primarily pediatric patients who have low blood glucose levels as determined by blood glucometer. Glucose is the principal energy source utilized by the brain and other tissues. "Dextrose" is used to describe the six-carbon sugar that is the principal form of carbohydrate for the body.

Action:

Rapid absorption of glucose by the cells in treatment of hypoglycemia.

Indications:

Known Hypoglycemia patient with coma
Symptomatic known Hypoglycemia

Contraindications:

May be detrimental to patients experiencing cerebral ischemia and / or hemorrhage. D₂₅W may increase cranial bleeding.

Precautions:

Localized irritation may occur when using smaller veins, which can cause tissue necrosis.
Ensure patency of IV line prior to administration. Extravasation may occur which will cause tissue necrosis.

Dosage:

2.5 grams (250 mg/mL)
Standard dose of 25 % dextrose in symptomatic hypoglycemia is 2 – 4 ml/kg IV.
If after 5 - 10 minutes and the first dose is ineffective, give second dose of 2 – 4 ml/kg IV.

Route:

IV only
DO NOT ATTEMPT TO "MAINLINE" -- D₂₅W is very, very necrotic.

Epinephrine 1:1,000**Description:**

The drug of choice for the emergency treatment of severe allergic reactions (anaphylaxis) to insect stings or bites, foods, drugs, and other allergens.

Action:

A potent catecholamine which mimics the responses of the sympathetic nervous system and constricts blood vessels (dilates) to improve blood pressure. Reduces leakage from blood vessels, relaxes smooth muscles in the bronchioles, alleviates wheezing and dyspnea and stimulates the heartbeat (constricts blood vessels).

Reverses the swelling and hives.

Indications:

Severe, systemic allergic reactions.

The medication must be prescribed to the patient or the EMT shall obtain orders for administration via either Medical Control or standing orders from Medical Control Physician.

Contraindications:

There are no contraindications for epinephrine in a life-threatening allergic reaction.

Precautions:

Should not be added to solutions containing sodium bicarbonate (deactivated by alkaline solutions)

May precipitate angina or Myocardial Infarction in susceptible patients.

Anxiety, chest pain, palpitations, tachycardia, headache, pallor, dizziness, nausea and vomiting are some common side affects.

Dosage:

Contains 1 mg of the drug in 1 ml of solvent.

The initial adult dose is 0.3 - 0.5 mg subcutaneous. The adult auto-injector dose is 0.3 mg.

The initial pediatric dose is 0.01 mg/kg subcutaneous. The pediatric auto-injector dose is 0.15 mg.

Consider repeating dose if patient exhibits no significant improvement after 5 – 10 minutes. Epinephrine acts quickly. It also is quickly used by the body; therefore, a repeat dosage may be necessary after 15 – 20 minutes. Contact Medical Control prior to additional doses.

Route:

Subcutaneous Injection
or
Intramuscular Injection

Nitroglycerin Tablet (NTG)
(NitroStat™, NitroDur™, NitroBid™)

Description:

Used in the management of chest pain associated with both Angina and Acute Myocardial Infarction.

Action:

A rapid smooth-muscle relaxant that causes decreased cardiac work.

Dilates both arterial and venous vessels and causes venous pooling of blood.

Causes vasodilation of coronary arteries; thus, increasing perfusion of ischemic myocardium.

Pain relief occurs within two minutes and therapeutic effects can be observed up to 30 minutes later.

Indications - must have all of the following criteria:

Exhibits signs and symptoms of chest pain, and

Has physician prescribed sublingual tablets or spray, and

Has specific authorization by medical direction unless standing orders exist.

Contraindications:

Hypotension or blood pressure below 100 mmHg systolic

Head injury or an increased intracranial pressure (ICP)

Hypovolemia, severe bradycardia, or tachycardia

Recent use (within 24 hours) of Viagra

Infants and children

Patient has already met maximum prescribed dose prior to EMT arrival

Precautions:

May induce headaches from vasodilation of cerebral vessels.

Patients may build up a tolerance.

The Medication deteriorates rapidly once bottle is opened.

Secure the top immediately after obtaining dose.

Ensure stock is current and fresh.

Protect from light.

Dosage:

One tablet, sub-lingual (0.4 mg)

Dose may be repeated every 3 - 5 minutes if no relief, BP > 100 mmHg systolic, and authorized by medical direction up to a maximum of 3 doses.

Routes:

Sublingually making sure patient does not swallow the tablet.

Also available in patches, sprays, and ointment.

Ointment/paste: Dosage is 1 - 2 inches of paste (6 - 12 mg) topically applied in a 4 inch circle on the chest.

Nitroglycerin Spray
(Nitrolingual Spray) / (Antianginal)

Description:

Used in the management of chest pain associated with both Angina and Acute Myocardial Infarction. The NTG spray is an aerosol preparation which delivers exactly 0.4 mg in each spray with a peak effect in two to four minutes.

Action:

A rapid smooth muscle relaxant that causes decreased cardiac work.
Dilates both arterial and venous vessels and causes venous pooling of blood
Causes vasodilation of coronary arteries; thus, increasing perfusion of ischemic myocardium.
Pain relief occurs within two minutes and therapeutic effects can be observed up to 30 minutes later.

Indications - must have all of the following criteria:

Exhibits signs and symptoms of chest pain, and
Has physician prescribed sublingual tablets or spray, and
Has specific authorization by medical direction unless standing orders exist.

Contraindications:

Hypotension or blood pressure below 100 mmHg systolic
Head injury or an increased intracranial pressure (ICP)
Hypovolemia, severe bradycardia, or tachycardia
Recent use (within 24 hours) of Viagra
Infants and children
Patient has already met maximum prescribed dose prior to EMT arrival

Precautions:

May induce headaches from vasodilation of cerebral vessels.
Patients may build up a tolerance.
The Medication deteriorates rapidly once bottle is opened.
 Secure the top immediately after obtaining dose.
 Ensure stock is current and fresh.
Protect from light.
Avoid contamination of cap. Wipe off cap with alcohol prep.

Dosage/Route:

1 spray (0.4 mg) sublingual.
No more than three (3) doses in 15 minutes.
The spray should not be inhaled.
Also available in tablets, patches, and ointment.

Oxygen (O₂)

Description:

Oxygen is the most important emergency drug. Oxygen is required by the body to facilitate the breakdown of glucose into usable energy form. Oxygen is odorless, colorless, and tasteless.

Actions:

Administration increases arterial oxygen tension. This increases the oxygen saturation available for hemoglobin. Oxygen is required by the cells for breaking down glucose into energy.

Indications:

Respiratory emergencies
Hypoxemia
Chest Pain
Cardiac arrest
Trauma

Contraindication:

NONE in the emergency setting

Precautions:

Patients with COPD may experience apnea. These patient's chemo-receptors no longer influence breathing. They have a hypoxic drive for stimulus.
Do not withhold oxygen from any patient.
Prolonged administration of high flow oxygen to newborn infants can result in eye damage.

Dosage:

Cardiac Arrest - 100% or as close to that as possible (BVM)
Hypoxia - 100% or as close as possible (BVM or 15 LPM / NRB)
Chest Pain - 100 % or as close as possible (15 LPM / NRB)
COPD – 100% or as close as possible (15 LPM / NRB)
2-6 LPM via BNC **IF** patient cannot tolerate a NRB mask
Be prepared to ventilate and intubate with a double lumen airway.

INTRAVENOUS THERAPY

MATH CALCULATION INTRAVENOUS THERAPY DRIP RATES

GOAL

To enable the student to calculate the appropriate drip rate to administer the amount of IV solutions as prescribed by the physician

OBJECTIVE

Given a simulated patient, the EMT student will be able to calculate the appropriate drip rate in 3 minutes.

EQUIPMENT

Pencil Paper Calculator (optional)

EMT-Basic students can utilize calculators for National Registry testing. However, NREMT prohibits their use in EMT-Paramedic testing.

PROCEDURE:

1. Determine the size of drip chamber used. (a.k.a. drop factor)
 - a. Micro drip chamber 60 drops (gtts) = 1 cc
 - b. Macro drip chamber may vary. Obtain information from manufacture label.
 1. Commonly used: 10, 15, 20, 30 gtts = 1 cc
 2. 1 cc = 1 ml
2. Calculate drops to be given per minute on the following formula:

$$\frac{\text{cc's to be administered (volume)} \times \text{drop factor}}{\text{Time to be administered in minutes}} = \text{___ gtts/min}$$

EXAMPLE:

The physician orders 250cc (amount to be administered) Normal Saline administered over one hour (time to be administered). The drip chamber selected is a 10 drop set (drop factor). How many drops per minute is needed to reach this objective?

$$\frac{250 \times 10}{60} = \frac{2500}{60} = 41.66 \text{ or } \underline{42 \text{ gtts/min.}}$$

PERIPHERAL INTRAVENOUS CANNULATION IN AN EXTREMITY IV BAG ASSEMBLY AND SET UP

GOAL

To properly assemble and prepare the IV bag and tubing

OBJECTIVE

Given a simulated patient, the EMT student will be able to assemble the IV bag and tubing, and all other equipment within needed to initiate an IV lifeline within 3 minutes

EQUIPMENT

Body substance isolation
IV administration set
IV fluid

PROCEDURE

1. Obtain orders from medical control online / off-line.
2. Gather and check equipment.
3. Take body substance isolation precautions.
4. Open the outer bag using the pre-cut slit.
 - a. use caution if using sharp objects to avoid puncturing the IV bag
 - b. Inspect IV fluid for:
 - i. correct fluid.
 - ii. clarity.
 - iii. expiration date.
5. Select proper IV tubing set and remove from package.
 - a. Completely untangle tubing.
 - b. Slide the flow adjustment clamp up toward the IV tubing spike to allow the flow adjustment to the closed position.
 - c. Ensure both end caps remain sterile even after removing the protective caps.
6. Connect or "spike" the IV tubing to the IV bag.
 - a. Remove the covering on the IV tubing at the top of the drip chamber to expose the beveled spike. This shall remain sterile.
 - b. Hold the IV bag upside down and remove the plastic tab covering the IV port. This port shall also remain sterile.
 - c. While holding the IV bag upside down, insert the IV tubing spike into the IV bag port pushing and twisting the spike until the spike penetrates the IV bag port seal.
7. Turn the IV bag upright.
 - a. Slowly squeeze the IV tubing drip chamber between the thumb and forefinger completely placing one side of the drip chamber against the other and hold for a couple of seconds.

- b. Remove fingers from drip chamber. The IV fluid should fill to the drip chamber fill line.
8. Flush fluid thru IV tubing to evacuate air, keeping keep the end sterile.
 - a. Open the flow adjustment. This will allow fluid from the IV bag through the drip chamber to push the air from the IV tubing.
 - b. After the IV line is full of IV fluid and no air bubbles exist, turn the flow adjustment to the closed position.
9. Hang the IV bag on an IV pole or other suitable device.
10. Place the IV tubing end near the IV site.
11. Prepare to initiate the IV.

CONSIDERATIONS

Do not delay patient transport to establish an IV in a High Priority patient.

Assemble the IV bag and establish IV access simultaneously if adequate personnel are available.

The EMT who gains IV access is ultimately responsible for the IV initiation process and thus documenting the IV initiation.

PERIPHERAL INTRAVENOUS CANNULATION IN AN EXTREMITY OBTAINING IV ACCESS

GOAL

To properly obtain IV access in an extremity and adjust the IV infusion rate

OBJECTIVE

Given a simulated patient, the EMT student will be able to properly obtain IV access and properly adjust the IV infusion rate in an extremity within 3 minutes.

EQUIPMENT

Body substance isolation
IV needle / catheter
Venous tourniquet
Tape (1" or 2") or Opsite® type device
Band-aids
Gauze Pads
Alcohol or Betadine Swabs

PROCEDURE

1. Take body substance isolation precautions.
2. Determine allergies.
3. Prepare to initiate the IV.
 - a. Place sharps container close to patient.
 - b. Tear tape into $\frac{1}{4}$ or $\frac{1}{2}$ inch wide strips approximately 6 to 8 inches long, and place near where the IV will be initiated. An Opsite® or other comparable device if available, may be opened and placed at this site. Use enough tape to secure IV site and tubing.
 - c. Open alcohol pads or betadine swabs, band-aids, and gauze pads at this site.
4. Expose the extremity where the IV will be initiated.
5. Select a proposed site. The site is to be based on the patient's condition. An IV first attempt "miss" in the AC, will prevent IV attempts distal to that site in the same arm. Therefore, in order of preference, the site should be:
 - a. back of hand
 - b. forearm
 - c. antecubital (AC)
6. Apply the venous tourniquet proximal to the elbow wrapping the tourniquet around the back of the extremity.
 - a. Stretch both ends outward and upward toward the front of the extremity.
 - b. Bring the ends toward each other and, while they are still pulled outward away from the arm, loop one end around the other – like tying a shoelace.
 - c. Tuck only the middle portion of one end under the crossover point using the index finger and leave a tail extended.

- d. Allow the tourniquet to rest against the extremity so that the crossover loop will hold its tightness against the skin.
7. Identify a suitable vein and specific site to cannulate. Palpate the vein at the proposed site to feel for any possible valves.
8. Prepare the site for cannulation.
 - a. Clean site with alcohol prep in a circular motion from center to outer area 3 – 4 inches and allow to air dry. This procedure may need to be repeated more than once to ensure site is clean. If using betadine swabs, allow betadine to stay on skin for a couple of minutes, then wipe clean in a swiping motion with alcohol.
9. Select the appropriate size gauge catheter based upon the patient's need or condition.
10. Remove the IV needle and catheter from its package and take protective cap off the end of the needle and ensure the catheter remains sterile.
 - a. Inspect the point of the needle and the tip of the plastic catheter for any defects.
 - b. Twist the catheter hub and the flashback chamber in opposite directions to prevent the catheter hub from sticking to the metal needle.
 - c. DO NOT slide the catheter over the point of the needle. This may cause catheter shear, resultant injury, and death to the patient.
10. The EMT is to hold the patient's extremity with his nondominant hand near the area to be cannulated. The EMT is to use his thumb to stretch the skin while bending downward slightly the patient's wrist. Be careful not to place thumb on the vein to be cannulated. This will cause blood flow to be occluded and the vein to flatten.
11. Hold the catheter and needle bevel up at a 35 to 45 degree angle with the thumb and index finger of the dominant hand.
12. Inform the patient they will feel a small prick sort of like a bee sting and avoid any motion.
 - a. continue to calm and reassure patient throughout the entire event
13. Entering the vein. (Option #1)
 - a. Apply traction to the vein in the opposite direction of the insertion and with the needle's point directly over the vein, quickly but carefully enter the needle into the skin and continue until the needle tip is on the wall of the vein.
 - i. If using a hand vein, lower the angle of the IV needle toward the skin as the needle enters the vein to help avoid going through the vein.
 - b. Slowly advance the needle through the vein's wall and into the vein's lumen, feeling for a "pop" as the needle passes through the vein.
 - c. Observe for blood filling the catheter's flashback chamber.
 - i. If blood fills the chamber, stop needle insertion and slowly insert the catheter into the vein until the catheter hub rests against the skin. Skip to # 15.
 - ii. If not, continue advancing the needle along the vein until blood begins to fill the flashback chamber. If successful, skip to # 15.

- iii. If unable to locate the vein now, withdraw both needle and catheter simultaneously slightly from the vein without completely removing the needle/catheter from the skin and re-attempt the IV again. If needle/catheter is completely removed, get another needle/catheter and start over.
- 14. Entering the vein. (Option #2)
 - a. Enter the skin to the side of the vein. The angle and bevel position are the same. However, once entry to the skin is made, rotate the needle $\frac{1}{4}$ turn to ensure the bevel is away from the vein wall.
 - b. Feel for a “pop” as the vein is entered. Once a flashback is achieved, align the angle of the catheter in the direction of the vein and remove the needle. Skip to # 15.
- 15. Needle Removal.
 - a. Apply slight pressure on the vein just proximal to the injection site.
 - b. Prepare IV tubing end for connection to catheter.
 - c. Slowly remove the IV needle, place in a sharps container and insert IV tubing into IV catheter hub and secure.
 - d. Release the tourniquet by pulling on the tail piece to undo the half knot.
- 16. Hold the IV tubing and catheter connection securely then slowly open the flow clamp.
 - a. Slowly increase the rate to allow fluid to flow into the vein at a fast rate. Set the rate at TKO until IV is secure.
 - b. Inspect site for signs of infiltration.
 - i. If none, then set the desired IV drip rate and closely examine site for infiltration. (see “Math Calculation, Intravenous Therapy Drip Rates”)
 - ii. If yes, turn off the flow and refer to IV infiltration protocol.
 - c. Clean up any blood around injection site with gauze pad, alcohol pad, or Hydrogen Peroxide on gauze pad, cotton swab or other acceptable means.
- 17. Secure the IV site with tape or Opsite® type device.
 - a. Place bandaid over puncture site.
 - b. Take one strip of $\frac{1}{4}$ inch tape, slide it sticky side up under the IV tubing at catheter hub.
 - c. Take care not to pull the catheter out of the patient’s arm, pull each end of the tape proximal and cross each tape tail to form an “X” and secure to the patient’s skin (chevron, “U” method or “H” method).
 - d. This process may be repeated or place the second piece of tape directly over the first.
 - e. Make a loop with the IV tubing and secure this using third piece of tape.
 - f. Use the last piece of tape and secure tubing at a point 5 – 10 inches proximal to the third piece of tape.
- 18. Continue to monitor the IV site for infiltration.
- 19. Continue to monitor the IV for proper flow rate.

NOTE: Attempt an IV only twice. Allow partner (if licensed) to try after two attempts.

TROUBLESHOOTING

If IV fluid does not begin to flow, ensure the venous tourniquet has been released.

The catheter bevel may be against the vein wall or against a valve. Pull back the catheter in 1/8 inch increments while slightly rotating the catheter. Stop and secure the IV in place when flow is achieved. Be careful not to pull the catheter out of the arm. Close visual inspection is required of both the injection site and the drip chamber.

For an IV flowing only when the patient's extremity is in a certain position (positional), consider utilizing an arm board. Secure the arm board to the patient's extremity without interfering with the IV flow, venous blood flow, and the patient's circulation.

Drip chamber fills with fluid during transport:

Turn off IV flow. Invert bag and squeeze fluid into bag until chamber is filled to the fill-line.

Air in the IV line above the slide clamp:

Pull line tight while being careful not to remove the line from the bag. Tap on the line to allow air to rise into the drip chamber. Remove large amounts of air using a needle and syringe.

**PERIPHERAL INTRAVENOUS CANNULATION
IN AN EXTREMITY
D₅₀W AND D₂₅W Bolus**

GOAL

To properly administer a medication bolus through an established IV line in an extremity

OBJECTIVE

Given a simulated patient, the EMT student will be able to properly administer a medication bolus through an established IV line in an extremity within 3 minutes

EQUIPMENT

Body substance isolation
Alcohol pads
An established patent IV line
Desired medication

PROCEDURE

1. Take body substance isolation precautions.
2. Determine allergies.
3. Obtain orders from Medical Direction unless standing orders exist.
 - a. Ensure the "5 R's" of medication administration.
 - b. Rule out contraindications.
 - c. Draw up or secure the correct medication and dose.
4. Cleanse with an alcohol pad the IV tubing's medication access port closest to the patient.
5. Carefully insert the needle or syringe containing the prescribed dose of the medication into the rubber cap covering the access port.
 - a. Kink the IV tubing above the injection site to prevent the medication from going away from the patient and possibly entering the IV drip chamber.
6. Continue to hold IV line closed above the injection site.
 - a. Administer the medication at the medication's suggested administration rate through the access port into the IV line.
 - b. After the desired medication amount has been administered, slowly remove the needle that contained the medication and properly dispose in a sharps container.
 - c. Release the IV tubing back into the open flowing position and open the IV tubing flow adjustment ball to the "wide open" rate. This will flush the remaining medication from the IV line and push the medication into the patient. Flush with 5.0 to 10.0 cc's of fluid.
7. Monitor the patient for signs of improvement or deterioration.

8. Adjust the IV tubing IV flow adjustment ball to the previous drip rate.
9. Document the drug given (name), concentration, dose, route, time, who administered the medication, effects, physician of record. Document should include other information per local protocol.

DISCONTINUING AN INTRAVENOUS LINE

GOAL

To discontinue an IV when indicated

OBJECTIVE

Given a simulated patient, the EMT student will be able to recognize the need for and discontinue an IV within 5 minutes.

EQUIPMENT

Body substance isolation
Alcohol or betadine prep
Band-Aid or 2x2 dressing and tape

INDICATIONS

Amount of fluid to be administered
IV line occluded
Signs of Infiltration
-Continued pain at IV site
-Swelling and redness at site

PROCEDURE

1. Gather equipment and ensure proper body substance isolation precautions.
2. Close flow regulator on IV tubing.
3. Remove tape from IV site.
4. Place alcohol or betadine prep over IV site.
5. Remove IV catheter and properly dispose in sharps container.
6. Apply pressure to site for few minutes for at least 3 – 5 minutes to control any bleeding from site.
7. Apply bandage or dressing to site.
8. Document removal:
 - a. Time.
 - b. Reason for removal.
 - c. Amount of fluid remaining in IV bag.

AUTOMATED EXTERNAL DEFIBRILLATION**Refer to current AHA Guidelines****GOAL**

To provide prompt defibrillation for patients who have confirmed circulatory arrest due to ventricular fibrillation

OBJECTIVE

Given a simulated patient, the EMT student will be able to administer the automatic external defibrillation procedure within 2 minutes.

EQUIPMENT

Body substance isolation precaution materials
Automated External Defibrillator
Blood Pressure Cuff and Stethoscope
Mannequin for simulation of procedures

PROCEDURE

Use of automated external defibrillators during resuscitation attempts.

OPERATIONAL STEPS

1. Take body substance isolation precautions.
2. Arrive on scene and perform initial assessment.
3. Stop CPR if in progress and verify pulselessness and apnea
4. Have partner resume CPR.
5. Attach device and turn on defibrillator power.
6. Begin narrative if machine has tape recorder.
7. Stop CPR.
8. Clear patient. Ensure all clear. Any contact with the patient is dangerous.
9. Initiate analysis of rhythm.

Machine advises shock.

1. Deliver shock.
2. Re-analyze rhythm.
3. If machine advises shock, deliver second shock.
4. Re-analyze rhythm.
5. If machine advises shock, deliver third shock.

6. Check pulse.
 - a. Check breathing and pulse.
 - i. If breathing adequately, give high concentration oxygen by non-rebreather mask and transport.
 - ii. If not breathing adequately, artificially ventilate with high concentration oxygen and transport.
 - b. If no pulse, resume CPR for one minute.
 - i. Repeat one cycle of up to three stacked shocks.
 - ii. Perform one minute of CPR.
 - iii. Make a transport decision.
 - iv. Deliver a third set of shocks on scene pursuant to local medical control.

Standard Operational Procedures

1. Assuming no on-scene ALS, transport the patient when one of the following occurs:
 - a. The patient regains a pulse.
 - b. Six shocks are delivered.
 - c. The machine gives three consecutive messages separated by one minute of CPR that no shock is advised.
2. One EMT-Basic operates the defibrillator and one performs CPR
3. Defibrillation comes first. Do not connect oxygen, or delay defibrillation.
4. EMT-Basic must be familiar with device used in operational EMS setting.
5. Avoid all contact with patient during analysis of rhythm.
6. State "Clear the patient" before delivering shocks.
7. No defibrillator is capable of working without properly functioning batteries. Check batteries at beginning of shift. Carry extra batteries.
8. Place pads at least 5 inches from pacemaker or implanted defibrillator.

Age and weight guideline

1. Airway and artificial ventilation is of prime importance.
2. Do not use automated external defibrillation in cardiac arrest in children under 8 years of age or less than 25 kg.

Persistent ventricular fibrillation and no available ALS backup.

1. After six shocks on scene, (three initial, three after one minute of CPR), make a transport decision.
2. Deliver additional shocks at the scene or en route by approval of local medical direction.
3. Automated external defibrillators cannot analyze rhythm when emergency vehicle is in motion. Completely stop the vehicle in order to analyze rhythm if more shocks are ordered.
4. Do not defibrillate in a moving ambulance due to safety.

Recurrent Ventricular Fibrillation - Defibrillation with No Available ACLS.

1. If enroute with unconscious patient check pulse frequently, at least every 30 seconds. If pulse is not present then:
 - a. Stop vehicle.
 - b. Start CPR if defibrillator is not immediately ready.
 - c. Analyze rhythm.
 - d. Deliver shock if indicated.
 - e. Continue resuscitation as per protocol.
2. If enroute with conscious patient having chest pain who becomes unconscious, pulseless and apneic then:
 - a. Stop vehicle.
 - b. Start CPR if defibrillator is not immediately ready.
 - c. Analyze rhythm.
 - d. Deliver up to 3 shocks, if indicated.
 - e. Continue resuscitation as per protocol.

NOTE: If "no shock" message is delivered and no pulse is present:

1. start or resume CPR.
2. analyze rhythm until three consecutive "no shock" messages are given or
3. six shocks given or
4. patient regains pulse and continue transport.

Single Rescuer with An Automated External Defibrillator

1. Follow sequence
 - a. Perform initial assessment.
 - b. Assure pulselessness, apnea.
 - c. Turn on AED power.
 - d. Attach device.
 - e. Indicate analysis of rhythm.
 - f. Deliver shock if necessary.
 - g. Follow protocol.
2. Defibrillation is initial step; Do not perform CPR prior to rhythm analysis.
3. EMS system activation should not occur until "no shock indicated", pulse returns, three shocks are delivered, or help arrives.

Pulse checks should not occur during rhythm analysis. Do not check pulse between stacked shocks 1 & 2 and stacked shocks 4 & 5.

Coordination of ALS personnel or EMT-Paramedics when EMT-Basics are using automated external defibrillators.

1. EMS system design establishes protocols.
2. AED usage does not require ALS on scene.
3. ALS should be notified of arrest events as soon as possible.
4. Considerations for EMT-Basic transporting the patient or waiting for ALS to arrive on the scene to transport should be in local protocols established by medical direction.

Safety Considerations

1. Water
2. Metal

Post Resuscitation Care

1. After automated external defibrillation protocol is completed, patient may:
 - a. Have pulses.
 - b. Have no pulse with machine indicating "no shock indicated."
 - c. Have no pulse with machine indicating shock.
2. If pulses return
 - a. See airway module.
 - b. See lifting and moving patient's module.
 - c. Consider awaiting ALS backup if appropriate.
 - d. See transportation module.
 - e. Continue to keep defibrillator device on patient en route.
 - f. Perform focused assessment and reassessment en route.

Other Considerations

Remember the chain of survival:

Early access, early CPR, early defibrillation and early advanced life support.

Do not perform CPR at times shocks are delivered. Stop chest compressions and artificial ventilations when the rhythm is being analyzed and when shocks are delivered.

No person should be touching patient when rhythm is being analyzed and when shocks are delivered.

Defibrillation is more effective than CPR, so stopping CPR during the process is more beneficial to patient outcome.

CPR may be stopped up to 90 seconds if three shocks are necessary.

Resume CPR only after up to the first three shocks are delivered.

APPENDIX A

Licensure Application Process

REQUIREMENTS FOR EMS PERSONNEL TO BECOME LICENSED IN TENNESSEE

The information provided in this section of the manual is provided to help the EMT students to become licensed in Tennessee. To be eligible for EMT licensure in Tennessee the applicant must have successfully completed a Department of Transportation approved Emergency Medical Technician curriculum to include the TN EMT Basic Extended Skills curriculum within the past year. Those applying from outside Tennessee must have applied within six months from completion of the course. In order for you to be issued a Tennessee EMT License, you must:

- Submit all of the required documentation,
- Pay all required fees,
- Successfully complete all training required,
- Successfully complete any written or practical examinations required

All documentation must be presented at the time of the written examination: Failure to submit the required documentation will result in the applicant being denied examination. Any questions concerning the application process should be addressed in writing to

**TN Department of Health
Division of Emergency Medical Services
Director of EMS Personnel Licensure
Cordell Hull Building 1st Floor
425 Fifth Avenue North
Nashville, TN 37247-0701**

UNDERSTANDING THE APPLICATION PROCESS

1. The TN Division of EMS (TDH – EMS) **does not** accept or send faxes to expedite applications. Allow fourteen working days for information mailed to TDH-EMS to be received and placed in a person's file. Federal Express or special courier services **will not appreciably reduce the process time**. If Federal Express or special courier services are used, the EMT is responsible for incurred charges. **Federal Express or special courier services must be sent to:**

**TN Department of Health
Division of Emergency Medical Services
Cordell Hull Building 1st Floor
425 Fifth Avenue North
Nashville, TN 37247-0701**
2. Absent any complicating factors, the average application processing time is **sixty days**.
3. **We will discuss application status with the applicant only.** Please inform potential employers and any others that application status updates must be obtained from the individual applicant.
4. Examination's results are provided by mail only. Examination scores or even "pass " or " fail" will not be given verbally.
5. If an address change or name change occurs any time during the application process, personnel are required to notify the TDH-EMS in writing within 30 days of the change.

6. Applicants are recommended not to arrange or accept employment in Tennessee until granted a license by this agency. You may not practice until you have a license. Employers may confirm your license status through the web site under license verification-Personnel.

With everyone's cooperation, the division will make every effort to expedite the application.

APPENDIX B

Renewal Process

WHEN DO I RENEW???

The Tennessee Department of Health, Division of Emergency Medical Services (TDH-EMS) renews EMT licenses in the EMT's birth month. The system was implemented to disseminate the mass number of renewals in June and December of each year. This system will allow the workload to be distributed over twelve months instead of two months. The system is very simple; personnel's EMS license will expire on the **LAST DAY** of the individual's **birth month**. If the EMT was born in an even year, the license will expire in an even year. If born in an odd year, the license will expire in an odd year. Example, if born October 15, 1947 the license will always expire on October 31 of an odd year. On initial licensure, individuals may not get the full two years and others may receive more than two years in order to get them on the correct expiration cycle. Please check the new EMT License and make note of the **THE EXPIRATION DATE**. Please contact your Regional Consultant if you have questions regarding the process.

HOW DO I RENEW . . .

The most frequently asked question at the Department of Health, Division of Emergency Medical Service is "How do I renew my EMT license?". There are three options available to accomplish EMT Renewal. These options are the renewal examination, Continuing Education Units (CEUs) or maintaining your National Registry Certification. Hopefully, the following information will answer some of the questions.

I. RENEWAL EXAMINATION

The first option is the renewal examination. The exam must be taken prior to the applicant's expiration date and the applicant must pass with a score of 70 % or greater.

- a. The examination can be **taken at anytime during the EMT's renewal cycle**. It is highly recommended not to wait until the month prior to expiration to take the examination. Renewal examinations should be taken 60 – 90 days prior to expiration to insure adequate time to receive the grade and submit renewal requirements.
- b. The renewal examinations are usually given the first **Thursday** of each month. The examinations are **normally** given at the Regional Health Offices and begin at 9:00 a.m. Contact your Regional Consultant for the exact examination locations and times.
- c. All scores will be issued by mail approximately three to five weeks after the examination. **SCORES WILL NOT BE GIVEN OVER THE TELEPHONE, FAX, or EMAIL.**
- d. You may retest if needed. Retests are administered at the times explained in **b.**

II. CONTINUING EDUCATION UNITS (CEU's)

The second option is Continuing Education Units. Continuing Education is a structured educational and training experience for personal or professional development in which participants are presumed to have previously attained a basic level of education, training, or experience. A Continuing Education Unit (CEU) is a standard unit of measurement that quantifies continuing education and training activities while serving the diversity of providers, activities, and purposes in adult education. Therefore, the Division has developed the following guidelines as criteria to meet the requirement for license renewal.

- a. One CEU is equal to ten contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction.
- b. The Division of Emergency Medical Services does not issue CEUs; we approve CEUs for licensure renewal. Agencies that can award CEUs are colleges, universities, proprietary schools, teaching hospitals, vocational-technical schools and other agencies that have meet the International Association for Continuing Education and Training (IACET) guidelines and criteria.
- c. CEUs must be recorded on official and original transcripts, certificates, or letters issued by a continuing education agency. The following information must be included with each record: the individual's name, the course title, the date(s) attended and the amount of CEUs awarded.
- d. CEUs must be attained during the individual's renewal cycle (normally 2 years). For example, if the applicant's license expires March 31, 2003, courses obtained from April 1, 2001 through March 31, 2003 may be used.
- e. CEUs must be listed on the renewal form. Do not mail CEU forms with the renewal packet. The CEU certificates must be kept on file by the individual for four (4) years from last renewal and are subject to audit at any time. **The Division mails the renewal form to the individual sixty days prior to their renewal date.** It is the individual's responsibility to request and maintain all documentation from the continuing education issuing agency.
- f. CEUs obtained must be EMS related courses. They must be courses or classes that offer information that will increase the EMT's abilities, skills and or knowledge in pre-hospital care and in areas that are within the scope of practice for the EMT's type of licensure. **An EMT may not use advanced skills instruction toward EMT renewal.** Example of non-usable CEU's for EMT renewal; ACLS, PALS, (course or review), NALS, EKG's, Advanced Airway Management, etc.
- g. College credit courses **may** be used **if** they are EMS related and enhances pre-hospital performance. One semester hour of college credit is equal to 1.0 CEU. As an example, anatomy and physiology is awarded four semester hours, this is equivalent to 4.0 CEUs or 40 contact hours. IV Therapy Courses and Paramedic Courses **may** be used for CEUs.
- h. BTLS/PHTLS are courses pre-approved by the Division and for a **maximum** of 1.5 CEUs for EMT: and Pediatric BTLS is pre-approved for 0.8 CEUs. The letter/certificate of successful completion must be available if the individual is audited. EMT-Basics may use EVOC (up to 1.0 CEU). Original certificates or letters of completion from the issuing agency with the individual's name, the course title, date(s) attended and the amount of CEUs awarded must be issued. No photocopies of cards, letters, or certificates are acceptable.
- i. Rescue courses **may** be used, but the maximum number of CEUs allowed for renewal is 1.0 CEU. For example, a vehicle extrication course is awarded 1.6 CEUs from the educational institution, but only 1.0 CEU may be used.
- j. Courses following the TEMA, FEMA or the National Fire Academy curriculum **may** be used toward renewal. The courses must be relevant to pre-hospital medical care. To receive full CEU credit, the course must be at least 50% medical, otherwise only 1.0 CEU credits may be used toward renewal. Certificates or letters

of completion from the issuing agency with the individual's name, the course title, the date(s) attended and the amount of CEUs awarded must be issued.

- k. Defensive driving/EVOC and other approved driving courses **may** be used for renewal. The maximum CEUs awarded for the initial courses is 1.0 CEU. A defensive driving refresher course may be awarded 0.4 CEUs.
- l. The APCO and Medical Priority Dispatch courses **may** be used for renewal. A certificate or a letter of completion must be issued by the sponsoring agency with the individual's name, the course title, the date(s) attended and the amount of CEUs awarded. They will be accepted for full CEU credits awarded.
- m. An instructor may receive renewal credit for classes taught in EMS or CPR courses, if the sponsoring agency verifies the number of instructional hours. 0.1 CEUs is awarded for each 10 hours of verified instruction. Credit is not awarded for attending an instructor's course.
- n. National conferences and other state-sponsored conferences generally can be used for renewal. If contact hours are used they can be converted to CEUs (0.1 CEU = 1 contact hour). Continuing Medical Education (CMEs) and Continuing Nursing Education (CNE) programs **may** be used for renewal if the information will add to the EMS provider's pre-hospital knowledge.
- o. Commercially prepared videotapes **may** be used for ½ of the required CEU's **only** if CEUs are issued by an educational entity, or from a State approved vendor. **The tapes must be current, and cover EMS related material.**
- p. Magazine/Journal articles may **not** be used to meet renewal requirements.
- q. State approved online services may be used toward licensure renewal. An individual may obtain up to ½ of the required CEU's utilizing State approved online services. Courses obtained **MUST** be within the Scope of Practice for the level of licensure being renewed.
- r. Inservice training **may** be used **only** if CEUs are awarded.
- s. Completing renewal requirements for the National Registry and providing proof of renewal by NREMT may satisfy renewal requirements for TN EMT Licensure at the individual's licensure level.
- t. All material submitted must be within the individual's Scope of Practice, but at least 50 % must be medical content within the Scope of Practice in nature.

LICENSE RENEWAL SUBMISSION

Tennessee licensed EMT's have two methods to submit license renewal requirements to the TDH-EMS. Beginning in February 2002 the Department of Health, Division of Emergency Medical Services began allowing online renewal.

The first option is the traditional mail method. Personnel receive the renewal packet in the mail approximately 60 days prior to expiration. Personnel shall then complete the required information which includes but is not limited to, making corrections / additions to the front page and listing the CEU's on the back page. The appropriate renewal fee and the properly executed forms are to be enclosed and return to Department of Revenue by Certified mail with Return Receipt Requested.

The second option is online renewal. Application may be made up to 120 days prior to the renewal date. The website is <http://www.tennesseeanytime.org/hlrs>. Instructions are listed on the next page.

Regardless which licensure renewal method is chosen, personnel **do not send** copies of CEU's or contact hours unless requested to do so by the TDH-EMS. The Division will be conducting an audit on those renewing each month. If chosen in the audit, copies of renewal documentation (CEUs) will be required to be submitted. Those being audited will be provided with detail instructions in the request. The chances of audit are 10% no matter which renewal process is chosen. Audits can go back as far as four (4) years, therefore, personnel must maintain records for that period. Failure to produce records when requested is revocation of the individual's license.

Please contact Donna Tidwell, Director of EMS Personnel Licensure, if there are any questions or for additional information.

INSTRUCTIONS FOR ONLINE RENEWAL

Web site: www.tennesseeanytime.org

On the main page choose **Renew a Health License** to get to the appropriate option to either update Professional License information or to update Facility License information.

STEP 1

LOG IN At the Log In screen, provide information about you or your facility.

For professional licenses:

- 1) Select the appropriate board
- 2) Select the appropriate profession
- 3) Provide EMT license number and enter either:
 - the birth date and social security number **or**
 - the Transaction Number from the renewal notice

For facility licenses:

- 1) Select the board
- 2) Select the type of facility
- 3) Provide the license number
- 4) The transaction Number from the renewal notice

STEP 2

UPDATE PERSONNEL INFORMATION Enter changes or corrections in the boxes provided on this page. Changes or corrections to information for which there is not a box, contact the appropriate Board. **DO NOT ADD TITLES or INITIALS TO YOUR NAME, i.e. Capt. Tom Hall or Sue Jones, EMT**

UPDATE CONFIRMATION

After changes or corrections, a confirmation of update will be received. The confirmation page will provide eligibility status, the license renewal cost, and contact numbers for the appropriate Board.

STEP 3

RENEWAL INFORMATION

Review and answer questions and statements regarding renewal. By submitting this information, the EMT certifies that the information entered is true and correct and that the EMT has complied with all renewal requirements and, if applicable, satisfied all continuing education and competency requirements for the two (2) previous calendar years as set forth in the Tennessee Code Annotated and the Official Compilation Rules and Regulations of the State of Tennessee regulating the practice of the EMT's profession.

Step 4

PAYMENT

Enter credit/debit card payment information.

RENEWAL CONFIRMATION

Print the renewal confirmation and maintain this renewal confirmation. The confirmation confirms the EMT's renewal application has been accepted and will be fully posted into the Department's licensing system within 2 business days. A Renewal Certificate will be mailed as soon as the renewal application has been fully processed.

Submit questions or concerns in writing. Courses not listed must be pre-approved. A written response must be received from the Division by the requestor(s) for an official response. Address written requests and or concerns to:

Donna Tidwell, Director of EMS Personnel Licensure
Division of Emergency Medical Services
Cordell Hull Building, 1st Floor
425 Fifth Avenue North
Nashville, TN 37247-0701

EMT-Basic National Registry Re-registration

Disclaimer: Personnel are responsible for remaining up-to-date with all licensure issues. Registrants are responsible to notify the NREMT of any change in address in writing or via their web site: www.nremt.org. Reregistration is an individual responsibility.

The Tennessee Division of Emergency Medical Services utilizes the National Registry written and practical examinations as the "state test" as part of the eligibility requirements to obtain EMT and or Paramedic licensure. Tennessee does not require Emergency Medical Technicians to maintain National Registry status. **Personnel must obtain and maintain a Tennessee license in order to practice as an EMT in the state of Tennessee. The National Registry card alone is not certification to practice as an EMT at any level and or anywhere in this state.** The individual EMT is personally responsible for keeping up with any changes in renewal requirements.

National Registry renewal requirements are much different than those of Tennessee. Therefore, careful attention, planning, organization, and preparation are required in order to maintain both the TN License and the National Registry certification.

National Registry re-registration is awarded on a biennial basis (once every two years) upon completion and verification of the required education and submission of the re-registration form and fee.

To renew registration, the applicant must:

1. Be actively working within an emergency medical service, rescue service, or health/patient care activity.
2. Complete all continuing education requirements outlined in the reregistration brochure prior to the March expiration date.
3. Complete the reregistration report with appropriate signatures, requested verification and reregistration fee to the NREMT office.
4. Submit proper verification as stated or required.

Note: Re-registration forms are mailed in November prior to the expiration date. Reregistration forms must be postmarked to the Registry office no later than the March 31 expiration date.

Persons required to maintain National Registry as a condition of employment must submit reregistration material to the NREMT by mid February of the year of expiration. Regardless of when reregistration information is received or completed, registrant's license EXPIRES midnight, March 31. **There are no grace periods.**

Re-registration requirements include:

1. Completion of a state approved National Standard EMT-Basic refresher training program consisting of a minimum of 24 hours of didactic course work. Of the 24 hours, 16 hours must be from the six(6) modules as outlined below. The remaining eight(8) hours must reflect subject matter included in the 1994 EMT-Basic National Curriculum).

Preparatory	1 hour
Airway	2 hours
Patient Assessment	3 hours
Medical / Behavioral	4 hours
Trauma	4 hours
Obstetrics, Infants, and Children	2 hours
Elective	8 hours from EMT Basic Curriculum
TOTAL	24 hours

2. CPR credential current to March expiration date by the American Heart Association, the American National Red Cross, or the State EMS Office. Courses must include: Adult and Child 1 & 2 Rescuer CPR, Adult and Child Obstructed Airway, Infant Obstructed Airway, and Infant CPR.

3. Additional 48 hours of continuing education as outlined in the reregistration brochures.

All continuing education must have been completed within the current registration period. Continuing education completed prior to March 31st of the previous year of expiration will NOT be accepted. The registrant's first reregistration may only include continuing education completed after the date of initial registration.

Ex: Registrant expires March 31, 2005. Registrant's new expiration date is March 31, 2007. The Registry WILL NOT accept any continuing education received on or prior to March 31, 2005 for the 2007 expiration.

Any subject covered in any National Standard EMT-Basic Course or higher is accepted for continuing education credit. These topics may be presented utilizing critiques, didactic sessions, practical drills, workshops, seminars, or other approved in-service training. Topics not contained within the National Standard EMT curricula will require prior approval.

4. Verification of EMT-Basic skills by signature of Training Program Director, Service Director of Operations or the Physician Director

Successful completion of any of the following courses, with specified minimum number of hours, may be applied toward continuing education hours:

Auto Extrication	16 hours
Emergency Driving	12 hours
Dispatcher Training	12 hours
Teaching CPR	12 hours

A maximum of 24 hours in any one topic may be applied.

Verification: The registrant must submit a certificate where applicable, in remaining cases, a statement outlining dates, times, and topical content on official letterhead signed by the registrant's supervisor, training officer or medical director.

The National Registry **DOES NOT** accept the following as Continuing Education:

- home study programs
- performance of duty
- volunteering with agencies
- serving as a skills examiner
- clinical rotations
- first aid courses

No registrant may obtain more than 24 hours of continuing education credit from one topic or one focus course.

Ex: Haz-Mat awards 3.0 (30 hours) credit hours through approved agency. The maximum allowed by NREMT is 24 hours.

APPENDIX C

**EMS Statutes
EMS Rules and Regulations
Destination Determinates
Field Triage Decision Scheme**

APPENDIX D

MISCELLANEOUS

MARK I AUTO-INJECTOR

For Chemical Nerve Agent Exposure

The Mark I kit consisting of one autoinjector of 2 mg Atropine Sulfate and one autoinjector of 600 mg Pralidoxime Chloride (2-PAM Chloride) may be administered by qualified emergency responders who have had adequate training on the on-site recognition and treatment of nerve agent exposure.

Some classic symptoms of nerve agent exposure include:

- unexplained runny nose
- tightness in chest/difficulty breathing
- pinpoint pupils of the eye resulting in blurred vision
- drooling, excessive sweating
- nausea, vomiting and abdominal cramps
- involuntary urination and defecation
- jerking, twitching and staggering
- headache, drowsiness, coma convulsions
- stoppage of breathing

Administration of the Nerve Agent Antidote Auto-Injector Kit (Mark I) and General Guidelines

When a first responder arrives on a scene potentially contaminated with nerve agents, don protective mask and personal protective equipment.

Responders that are in the “HOT” zone may initiate immediate treatment. EMS Personnel shall be limited to the “COLD” zone unless otherwise directed by the Incident Commander and or are properly trained and equipped to enter the “HOT” zone.

- If symptoms of nerve agent exposure occur, administer appropriate nerve agent antidotes.
- If nerve agent symptoms are still present after fifteen (15) minutes, repeat injections. • If symptoms still exist after an additional fifteen (15) minutes, repeat injections for a third time.
- If after the third set of injections, symptoms remain, do not give any more antidotes but seek advice from medical direction.

Patients responding favorably to administration of the nerve agent antidote auto-injector are to be closely monitored.

Chemical exposure patients shall be decontaminated PRIOR to initiating transport.

Mark I Auto-Injector The AtroPen®

The following are general guidelines on using the AtroPen® Auto-Injector. Each auto-injector has user guidelines printed on the pen.

1. Remove Mark I kit from the protective pouch.
2. Hold unit by plastic clip.
3. Remove AtroPen from slot number 1 of the plastic clip. The yellow safety cap will remain in the clip and the AtroPen will now be armed. DO NOT hold unit by green tip. The needle ejects from the green tip.
4. Grasp the unit and position the green tip of the AtroPen on victim's outer thigh.
5. Hold in place for ten (10) seconds to ensure Atropine has been properly delivered.

Mark I Auto-Injector The ComboPen®

The following are general guidelines on using the ComboPen® Auto-Injector. Each auto-injector has user guidelines printed on the pen.

1. Remove 2-PAM Chloride ComboPen® from slot number 2 of the plastic clip. The gray safety cap will remain in the clip and the ComboPen® will now be armed. DO NOT hold the unit by the black tip. The needle ejects from the black tip.
2. Grasp the unit and position the black tip of the ComboPen® on the victim's outer thigh.
3. Push firmly until auto-injector fires.
4. Hold in place for ten (10) seconds to ensure Pralidoxime Chloride has been properly delivered.

Practicing with Mark I Auto-Injector Trainers

1. Remove kit from protective pouch.
2. Hold Mark I trainer by plastic clip.
3. Remove AtroPen trainer from slot number 1 of the plastic clip. The yellow safety cap will remain in the clip.
4. Grasp the trainer and position the green tip of the AtroPen trainer on victim's outer thigh.
5. Push firmly until red prod ejects from unit.
6. Remove ComboPen trainer from slot number 2 of the plastic clip. The gray safety cap will remain in the clip.
7. Grasp the trainer and position the black tip of the ComboPen trainer on victim's outer thigh.
8. Push firmly until the white prod ejects from unit.
9. Reset Mark I Auto-Injector Trainers.

Resetting the AtroPen® Trainer

1. Gently pull the green tip out about ¼ inch to expose the neck of the unit.
2. Clamp open end of recocking tool on the neck of the AtroPen trainer below the green tip.
3. Place red prod down on hard surface and apply pressure until you hear a click.
4. Remove recocking tool.
5. Slide AtroPen trainer back into the plastic clip slot number 1 and press end of the unit into the yellow safety cap.
6. The stand-alone AtroPen trainer does not slide into a plastic clip.

Resetting the ComboPen® Trainer

1. Place the black recocking cap over the safety end of the ComboPen Trainer.
2. Rotate the black recocking cap until the two internal projections are aligned with the matching holes in the safety end of the training device.
3. Firmly press the black recocking cap down as far as it will go.
4. While holding the black recocking cap down, push the white prod against a hard surface, forcing the prod back into the trainer.
5. A click will be heard when the device is recocked.
6. Remove the black recocking cap.
7. Slide the ComboPen Trainer back into the plastic clip slot number 2 and press end of unit into gray safety cap.

Note: The stand-alone ComboPen Trainer does not slide into a plastic clip.

AtroPen® and ComboPen® are registered trademarks of Meridian Medical technologies, Inc. For additional information, see their website @ www.meridianmeds.com or contact:

Meridian Medical Technologies, Inc.
10240 Old Columbia Road
Columbia, MD 21046
Phone 1.800.638.8093



**State of Tennessee
Department of Health
Division of Emergency Medical Services**

Personnel are encouraged to utilize the online renewal and personal information process. Those not having access to the internet are to use this form to comply with TN EMS Rules and Regulations regarding proper notification of address and or name change.

Mail to:

State of Tennessee
Department of Health
Division of EMS
Cordell Hull Building, 1st Floor
425 Fifth Avenue North
Nashville, TN 37427-0701

Name as Shown on EMT License: _____

License Number: _____ **Expiration Date:** _____

I am changing my: _____ **Address** _____ **Name** _____ **Other**

Previous Name: _____

Previous Address: _____
Street Address

City **State** **Zip Code**

New Name: _____

New Address: _____
Street Address

City **State** **Zip Code**

Signature **Date**



State of Tennessee
Department of Health
Division of Emergency Medical Services

INTRAMUSCULAR INJECTION SKILL EVALUATION

Student Name: _____ Date: _____

Evaluator _____ ☐ Pass ☐ Retest ☐ Fail

	Points Possible	Points Awarded
Takes or verbalizes body substance isolation precautions	1	
Obtains order to administer medication	1	
Assembles equipment and supplies	1	
Checks medication for correct medication, concentration, expiration date, etc.	1	
Prepares vial and withdraws correct/desired medication dosage	1	
Removes excess air from syringe	1	
Explains process and possible side effects to patient	1	
Selects appropriate site	1	
Stretches or flattens the skin at the injection site	1	
Injects needle using a darting motion with needle at 90 degree angle	1	
Releases skin and aspirates: if blood appeared in syringe removes and applies direct pressure to the site with alcohol prep. If no blood appeared when aspirating, injected medication slowly	1	
Removes needle and applies pressure to area with alcohol prep	1	
DOES NOT recap needle after injection	1	
Disposes of contaminated needle and syringe in sharps container	1	
Covers injected site with bandage.	1	
Reassesses Patient for medication effects	1	
	14	

Critical Criteria:

- ☐ Did not take, or verbalize body substance isolation
- ☐ Did not obtain orders
- ☐ Did not check medication properly
- ☐ Failed to use sterile technique
- ☐ Administered incorrect dosage
- ☐ Did not aspirate syringe prior to injection of medication
- ☐ Recapped or failed to properly dispose of syringe
- ☐ Did not reassess patient